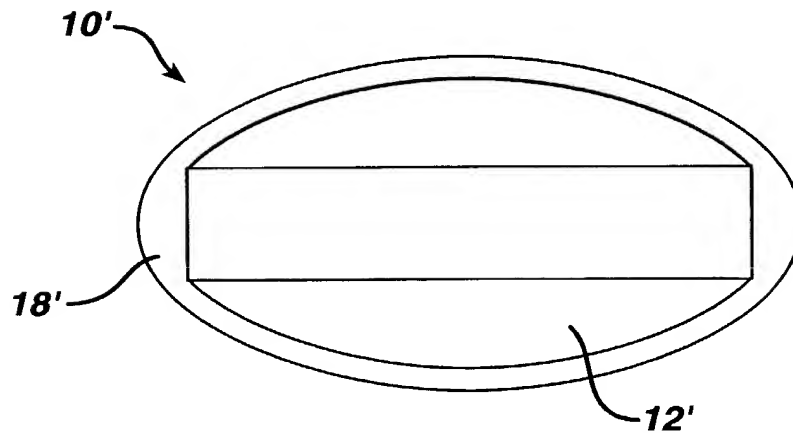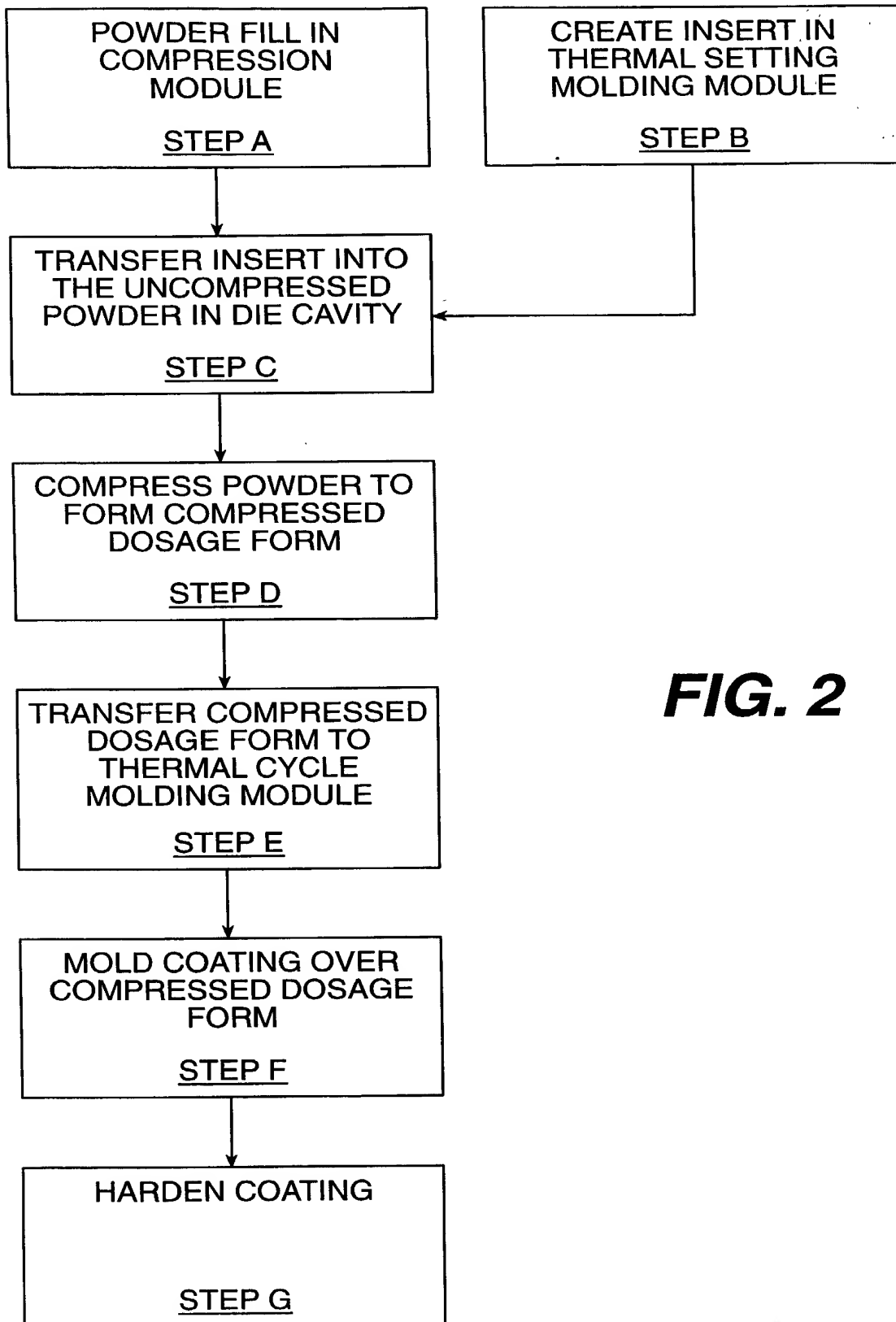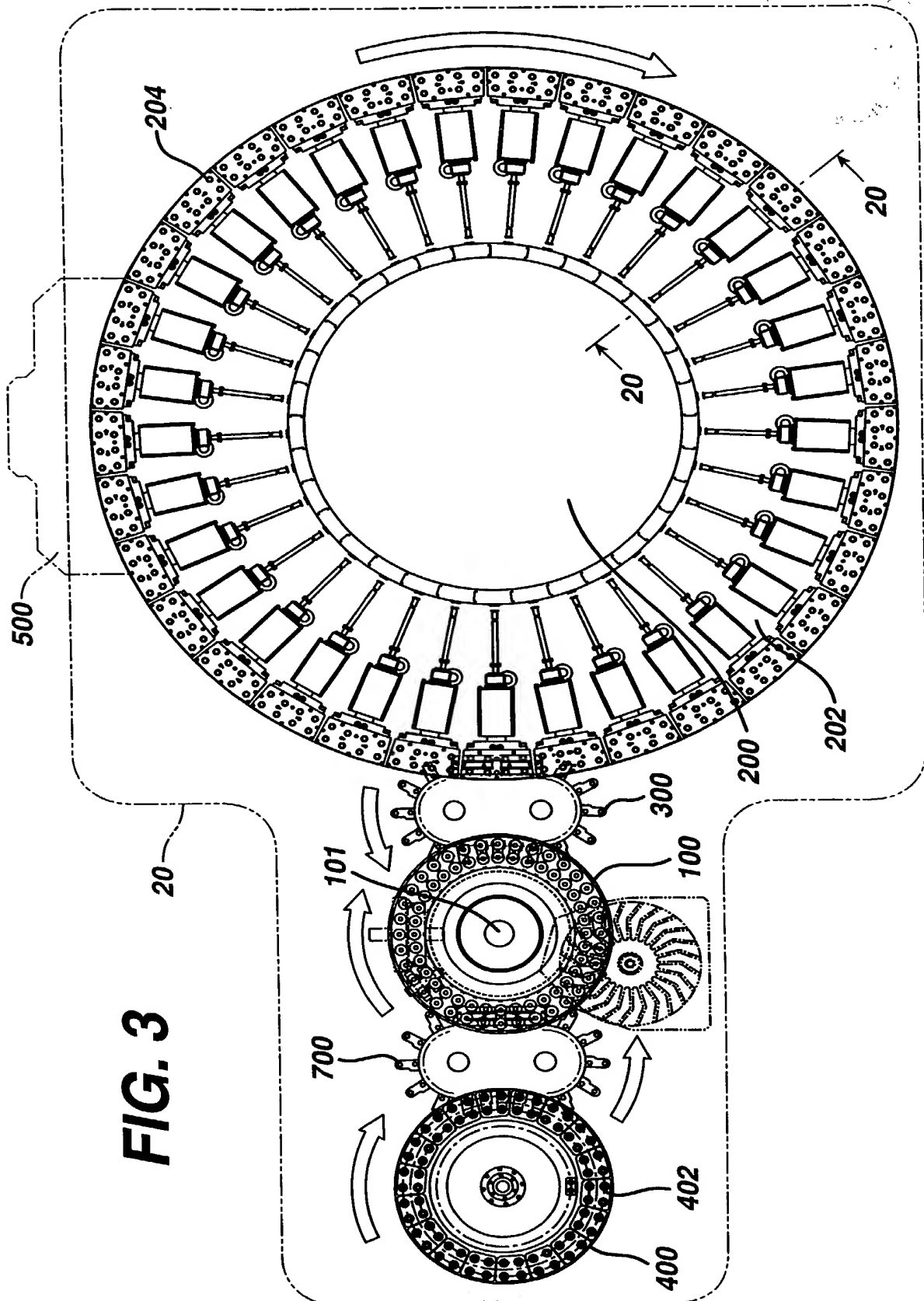TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
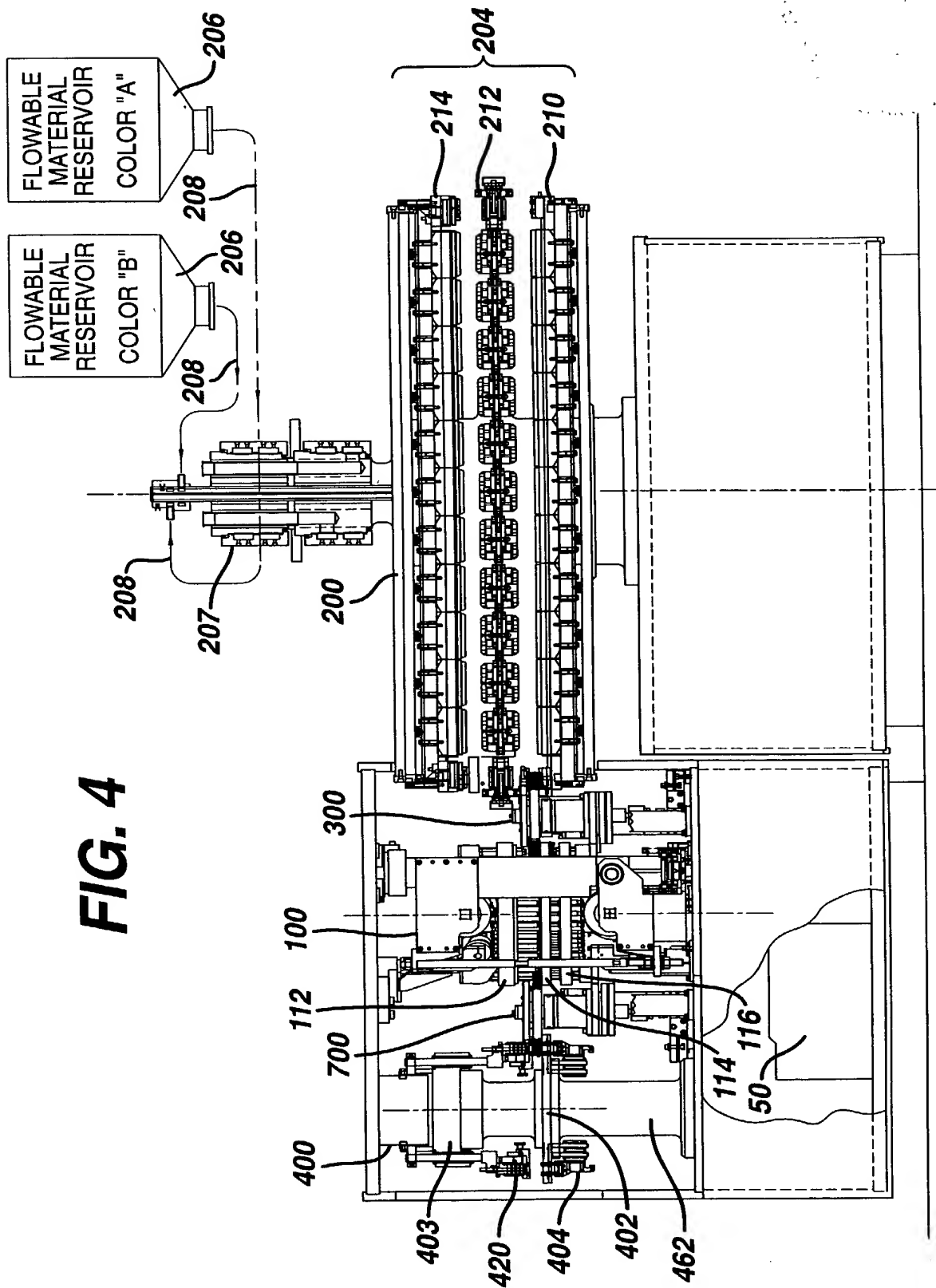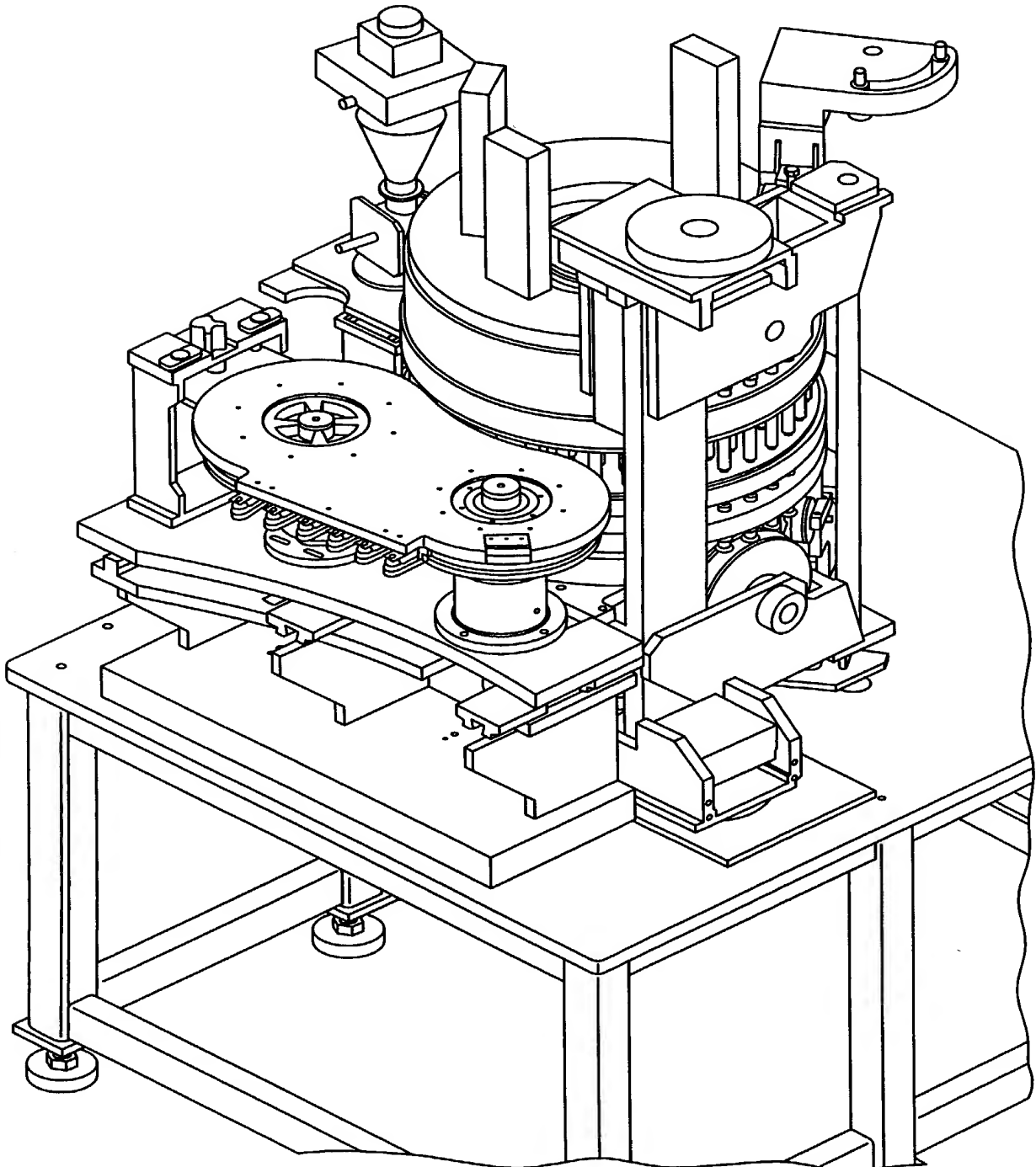DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 1A

FIG. 1B

```
┌────────────────────┐        ┌────────────────────┐
│   POWDER FILL IN   │        │  CREATE INSERT IN  │
│    COMPRESSION     │        │  THERMAL SETTING   │
│      MODULE        │        │  MOLDING MODULE    │
│                    │        │                    │
│      STEP A        │        │      STEP B        │
└────────────────────┘        └────────────────────┘
          │                              │
          ▼                              │
┌────────────────────┐                  │
│ TRANSFER INSERT INTO│                 │
│  THE UNCOMPRESSED  │◄─────────────────┘
│ POWDER IN DIE CAVITY│
│                    │
│      STEP C        │
└────────────────────┘
          │
          ▼
┌────────────────────┐
│ COMPRESS POWDER TO │
│  FORM COMPRESSED   │
│   DOSAGE FORM      │
│                    │
│      STEP D        │
└────────────────────┘
          │
          ▼
┌────────────────────┐
│TRANSFER COMPRESSED │
│  DOSAGE FORM TO    │
│   THERMAL CYCLE    │
│  MOLDING MODULE    │
│                    │
│      STEP E        │
└────────────────────┘
          │
          ▼
┌────────────────────┐
│ MOLD COATING OVER  │
│ COMPRESSED DOSAGE  │
│      FORM          │
│                    │
│      STEP F        │
└────────────────────┘
          │
          ▼
┌────────────────────┐
│  HARDEN COATING    │
│                    │
│                    │
│                    │
│      STEP G        │
└────────────────────┘
```

FIG. 2

FIG. 3

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
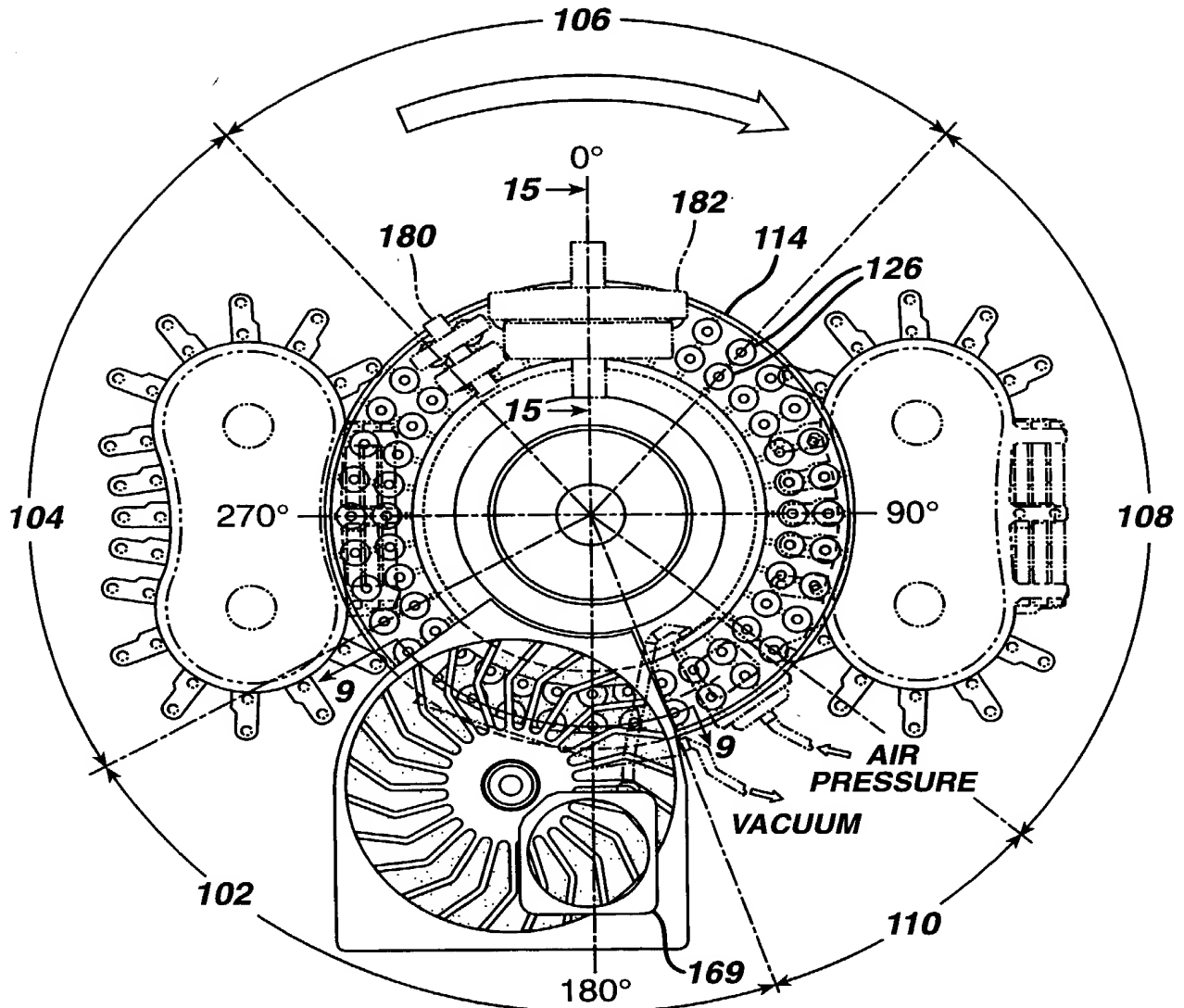DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 4

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
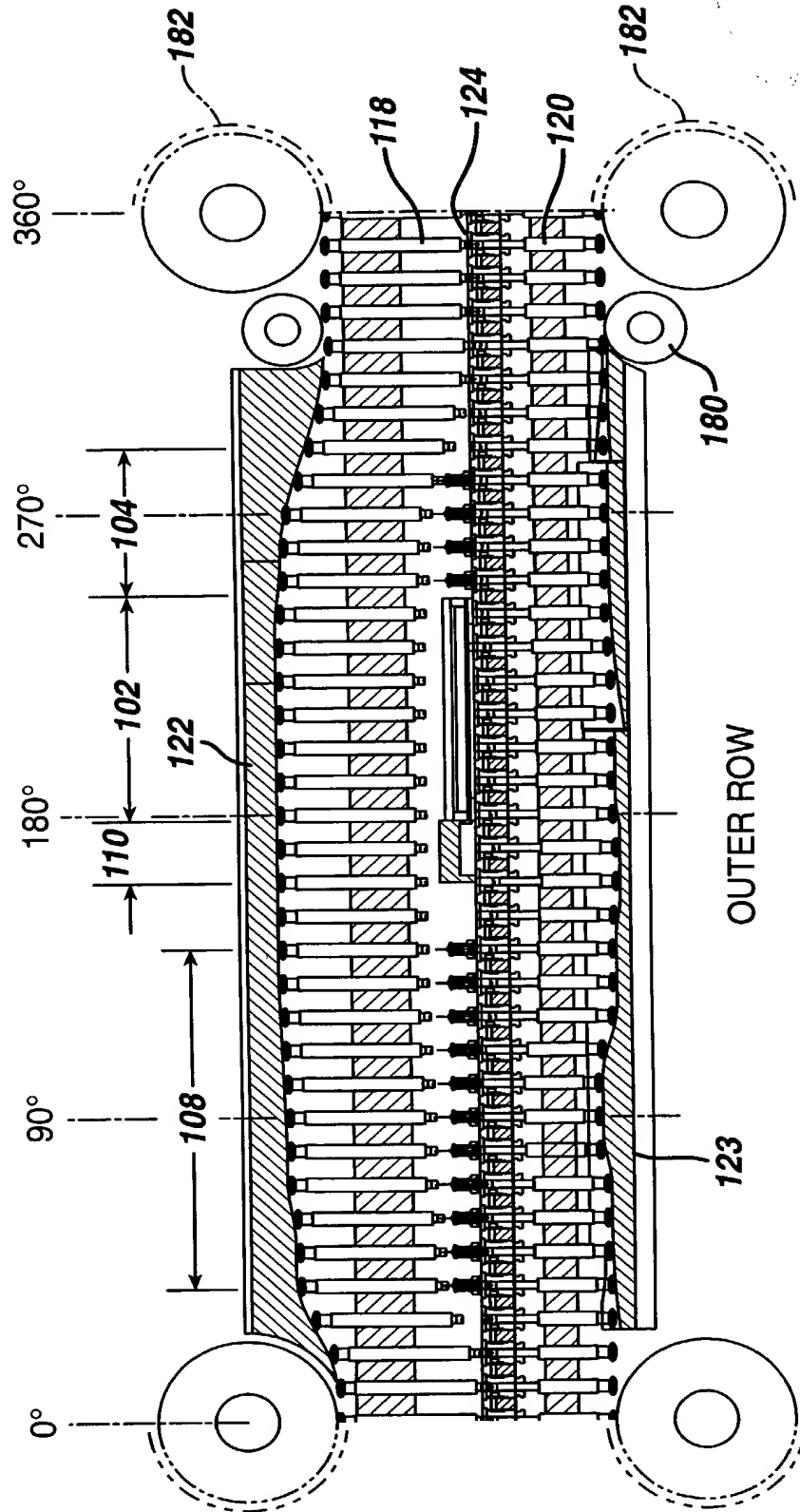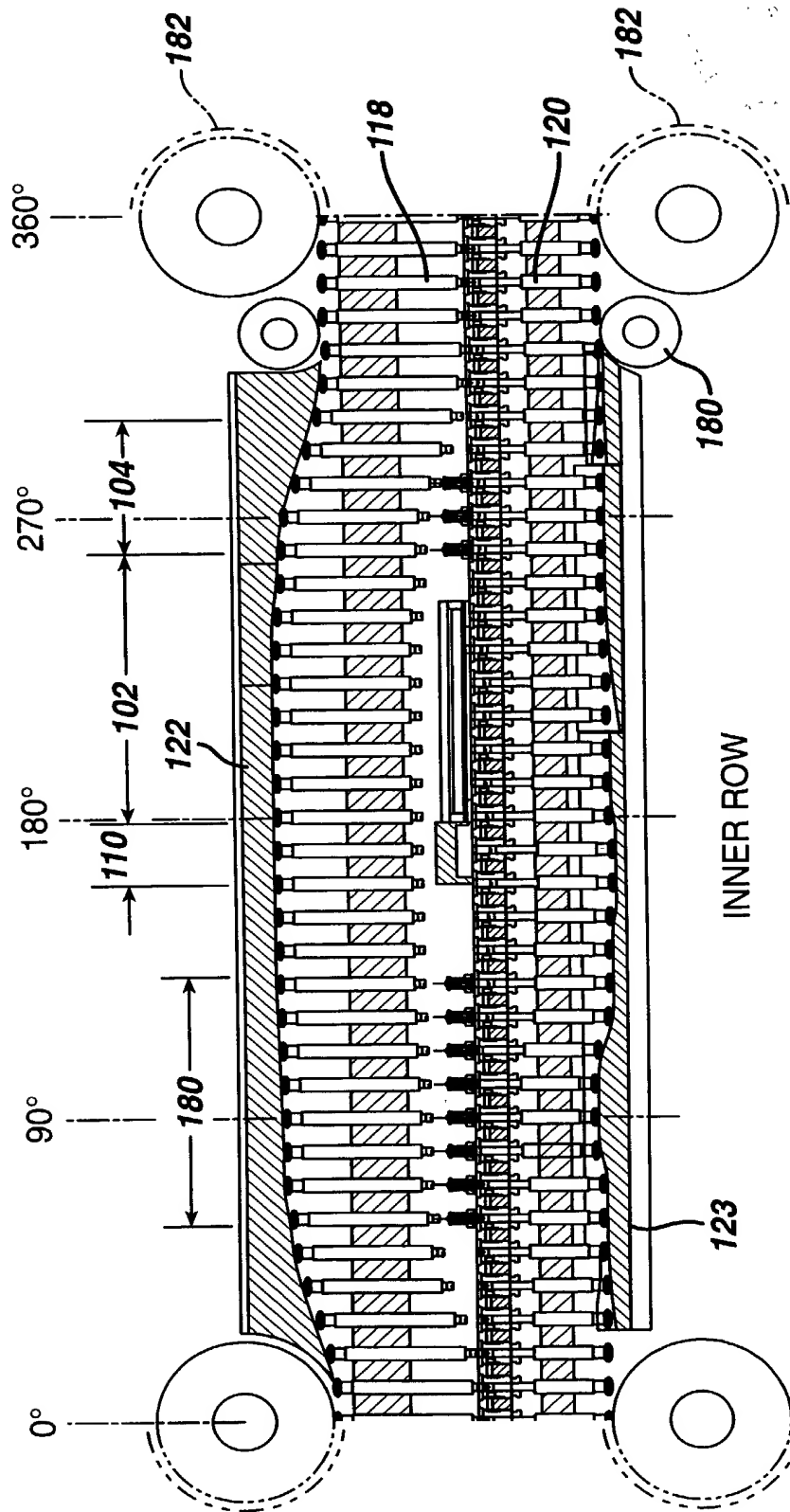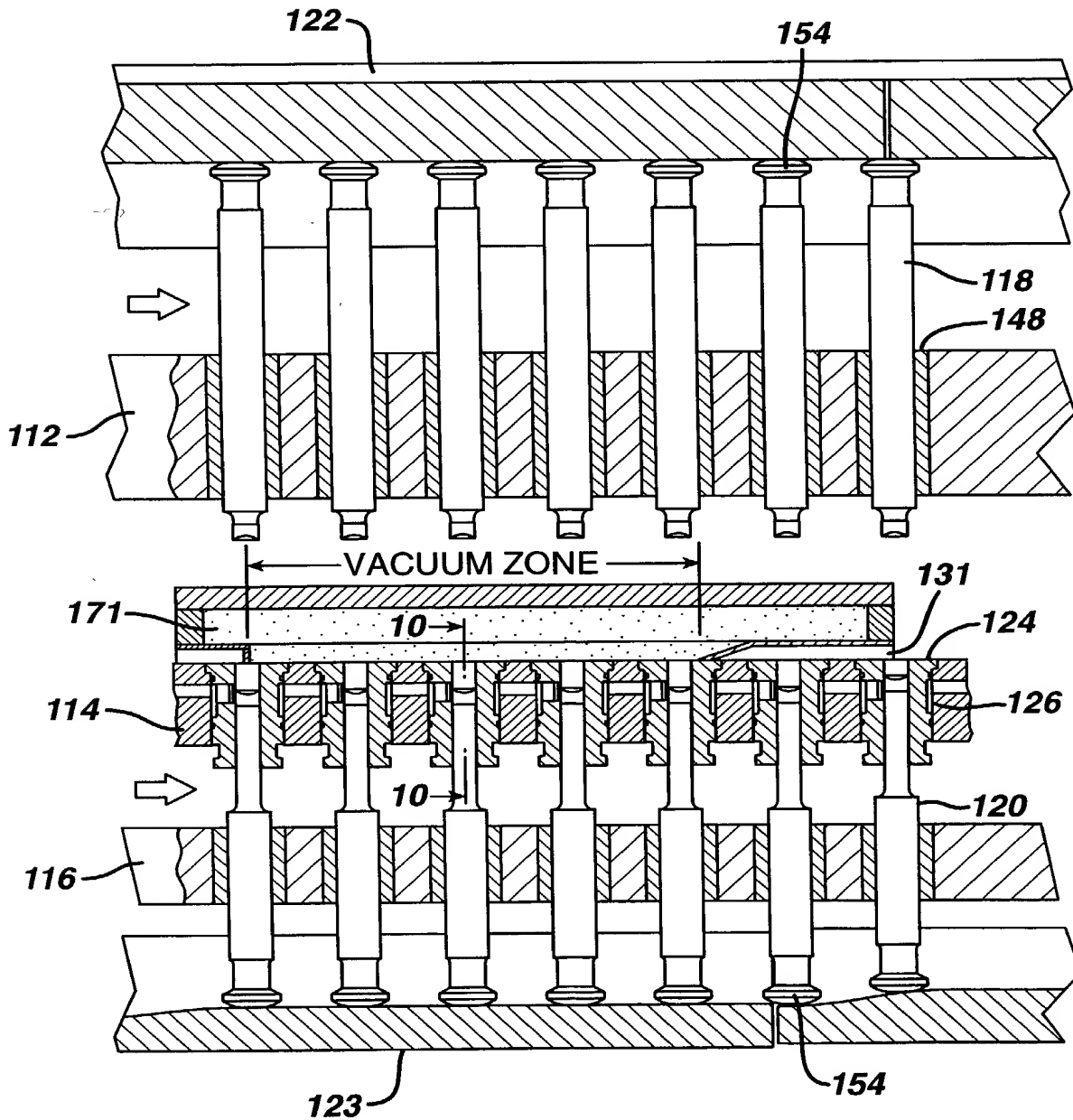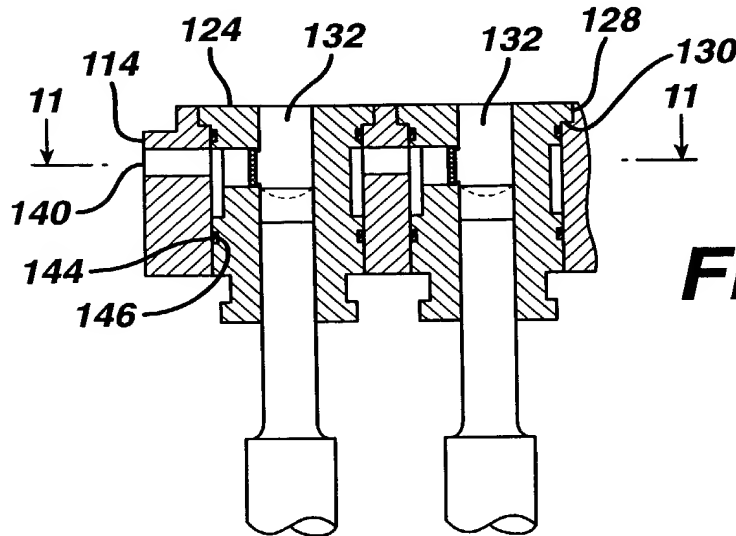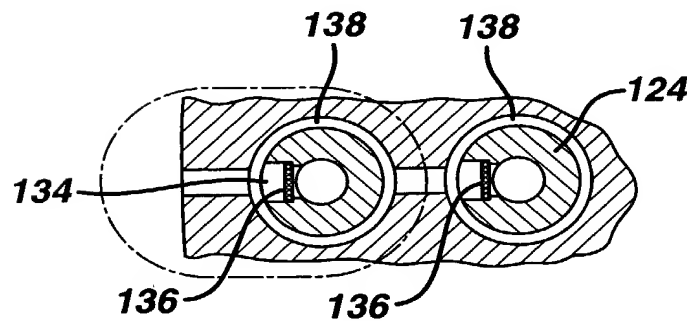DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 5

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
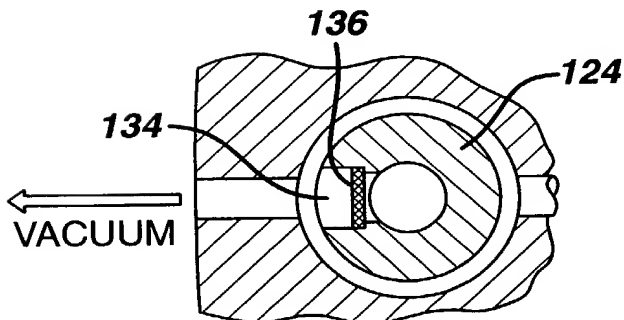DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 6

FIG. 7

OUTER ROW

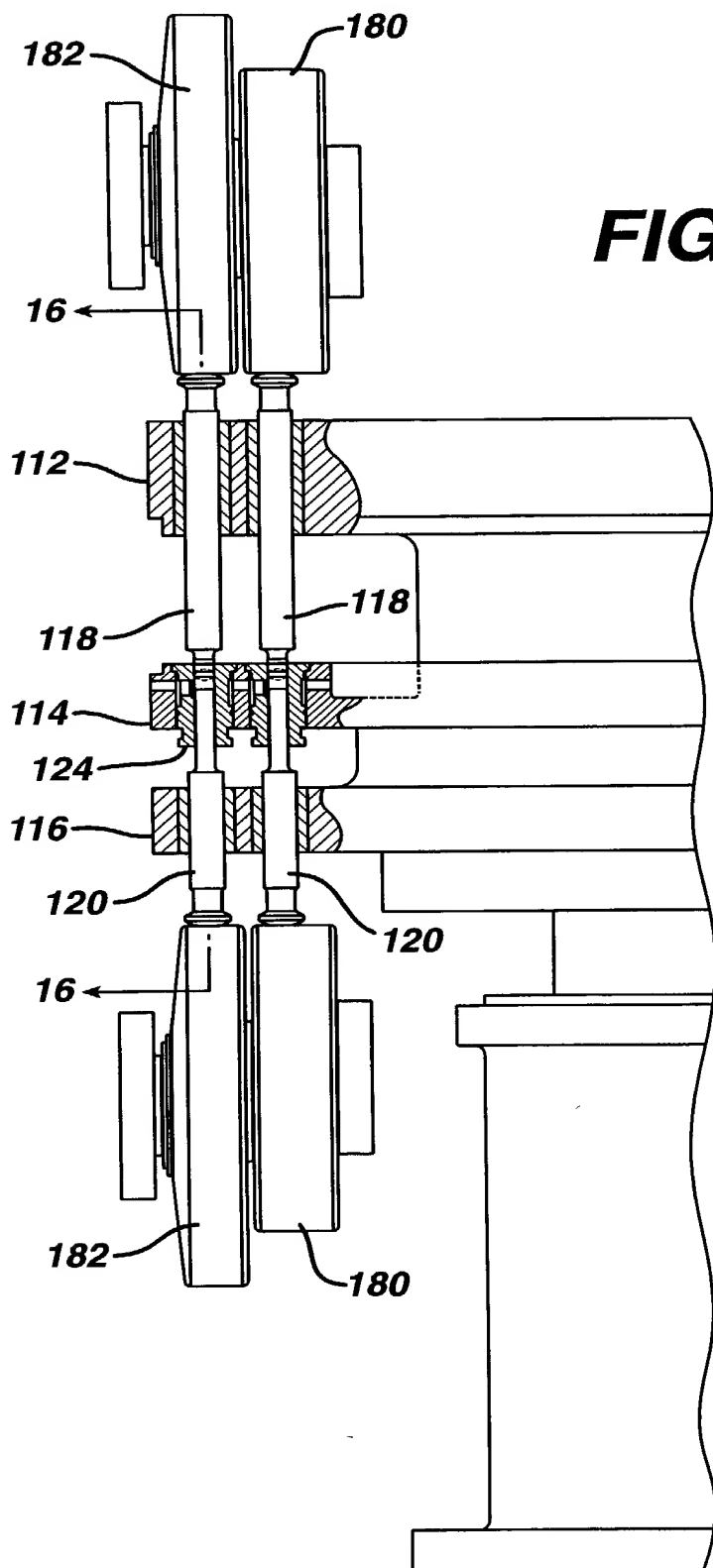*FIG. 8*

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 9

VACUUM ZONE
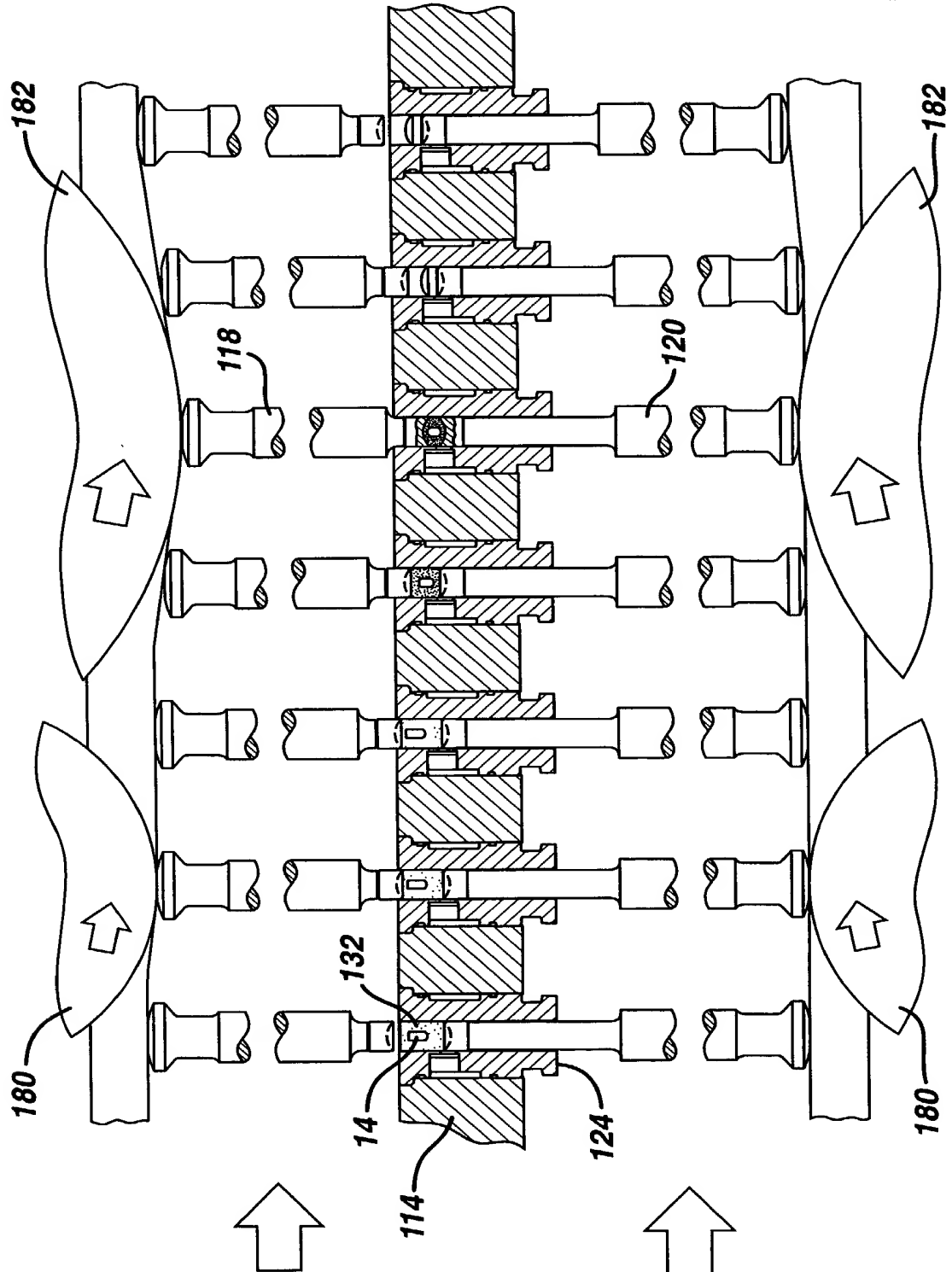
TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 10
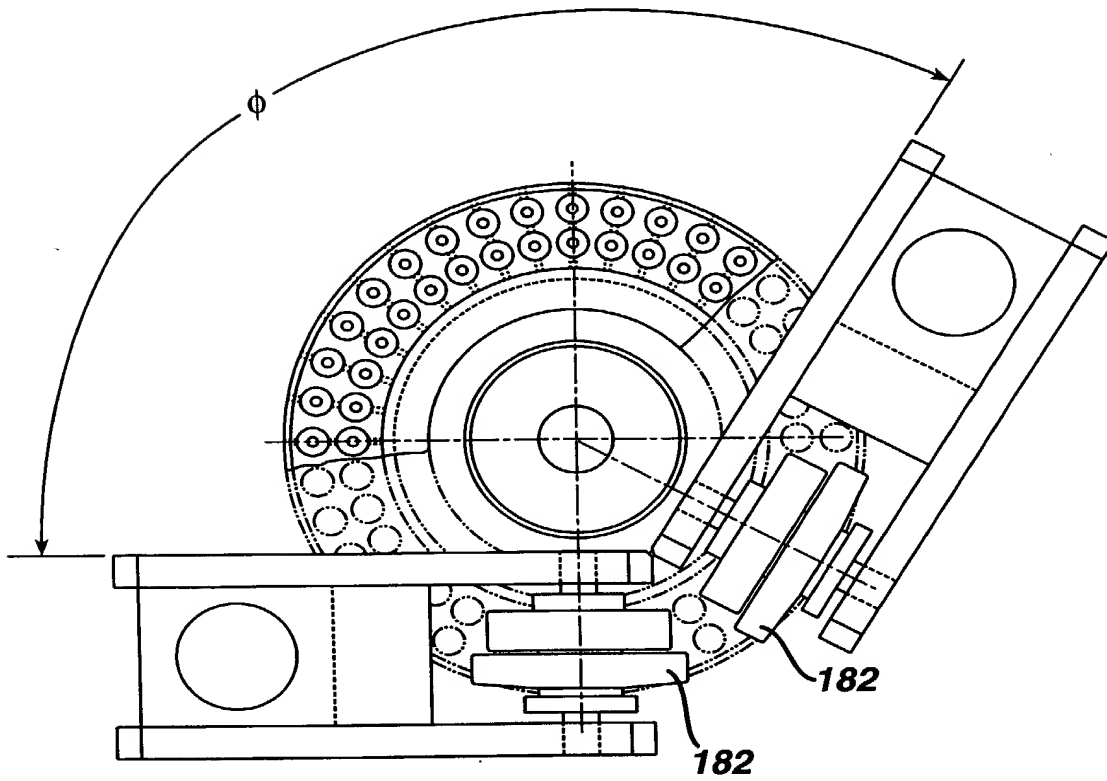

FIG. 11

FIG. 12

FIG. 12A
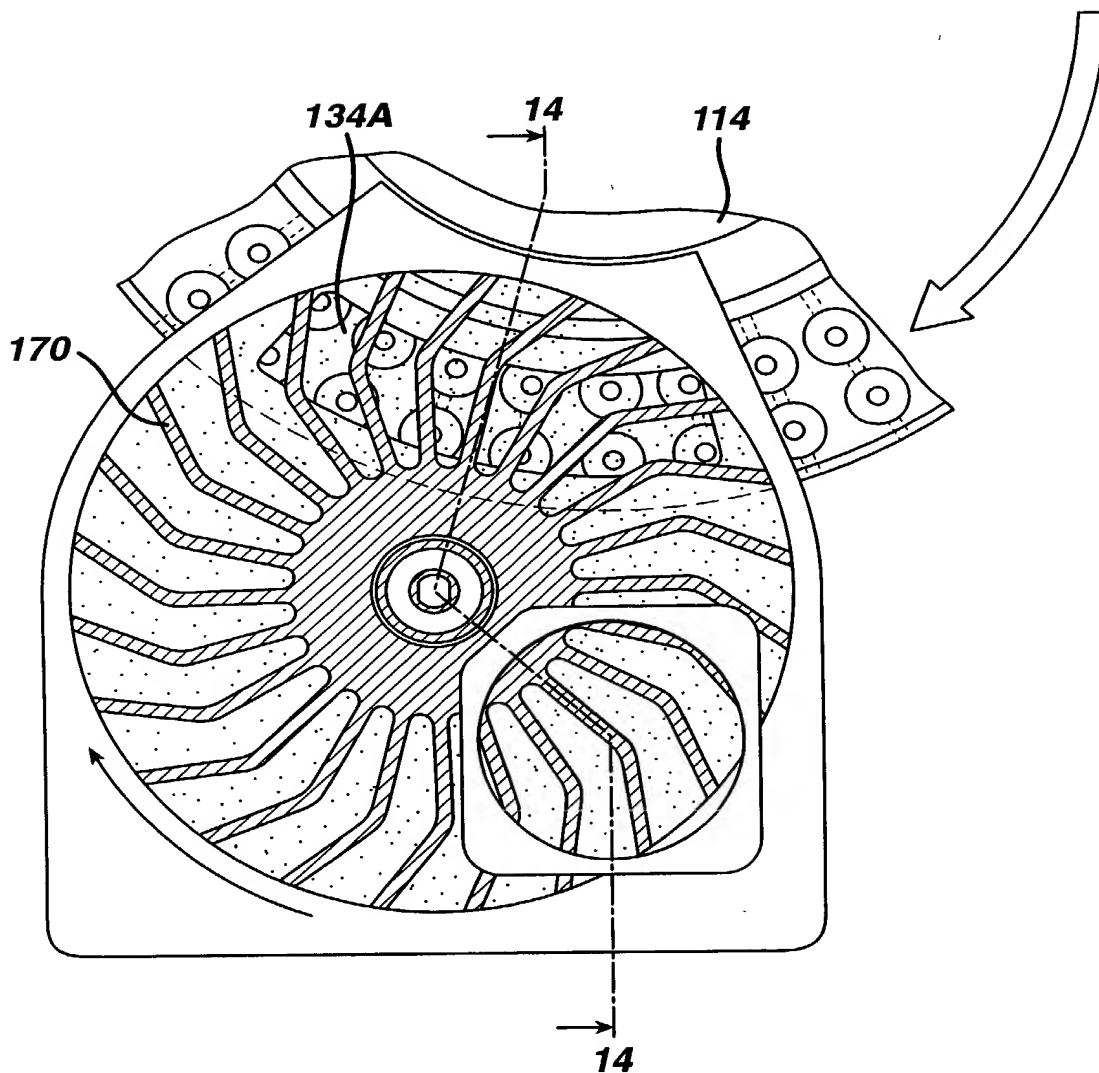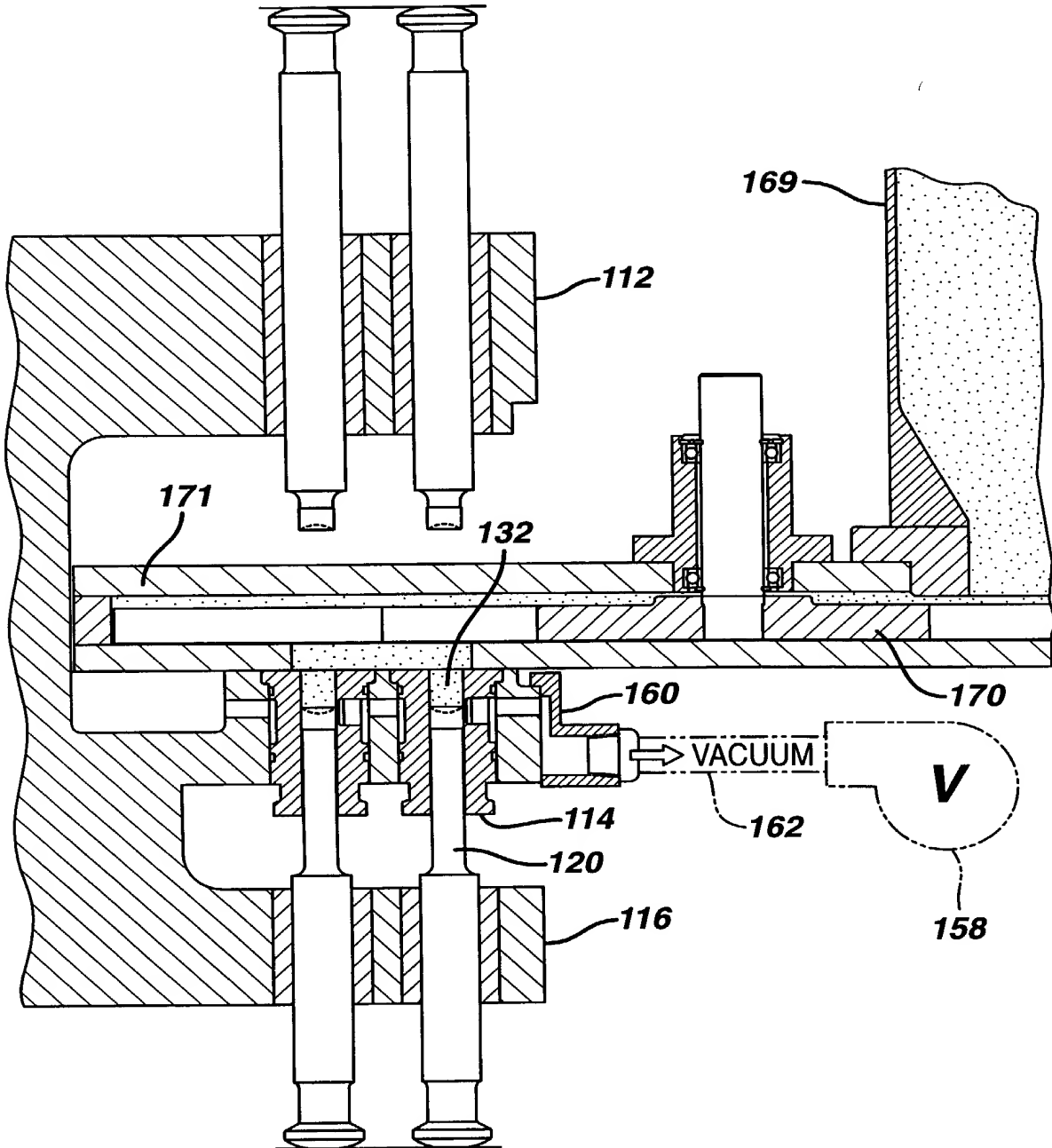
TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 13

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
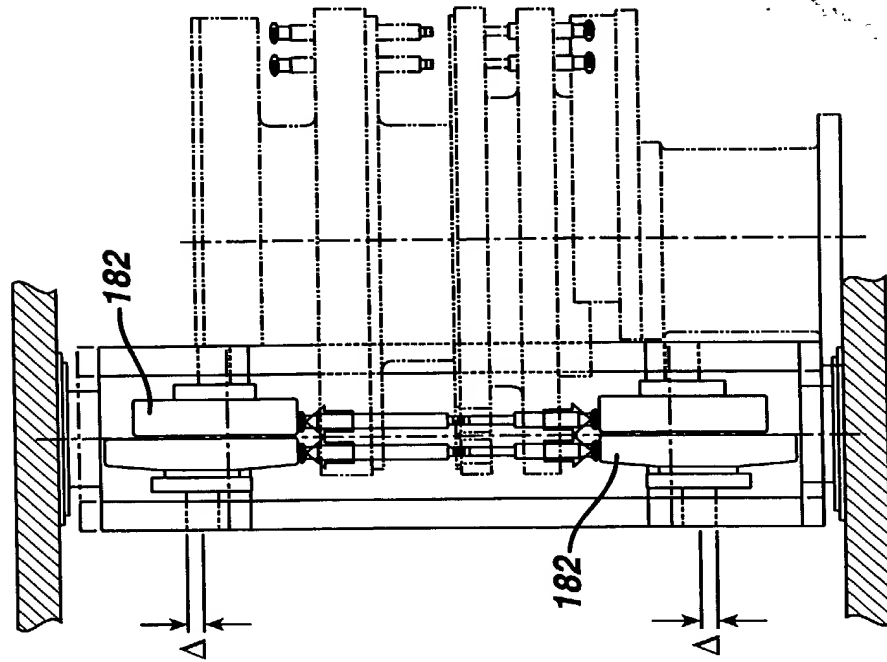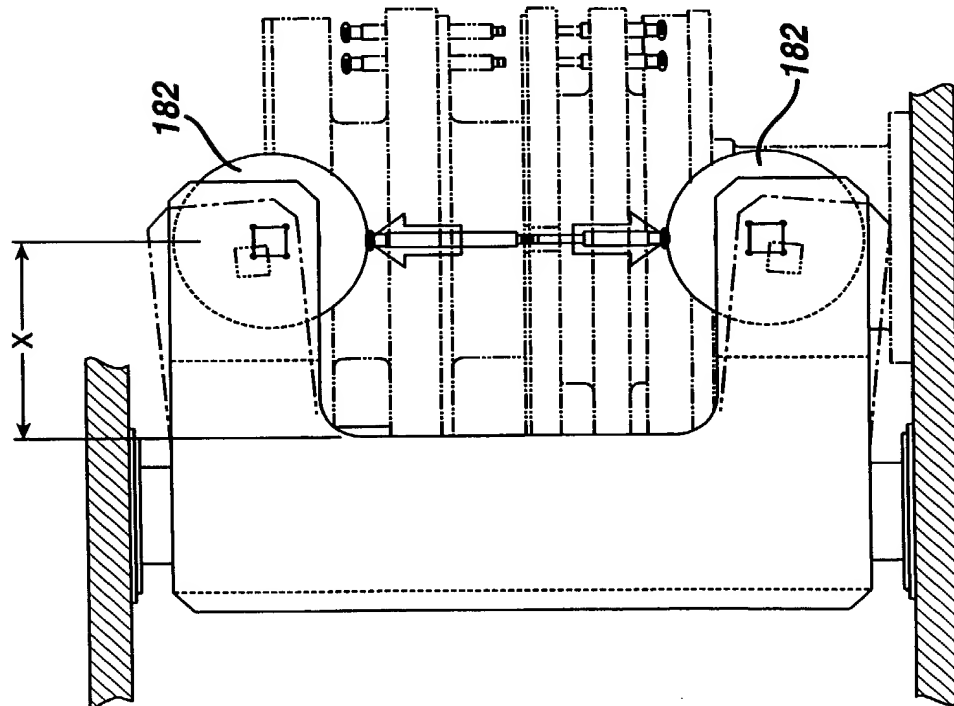DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 14

FIG. 15

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
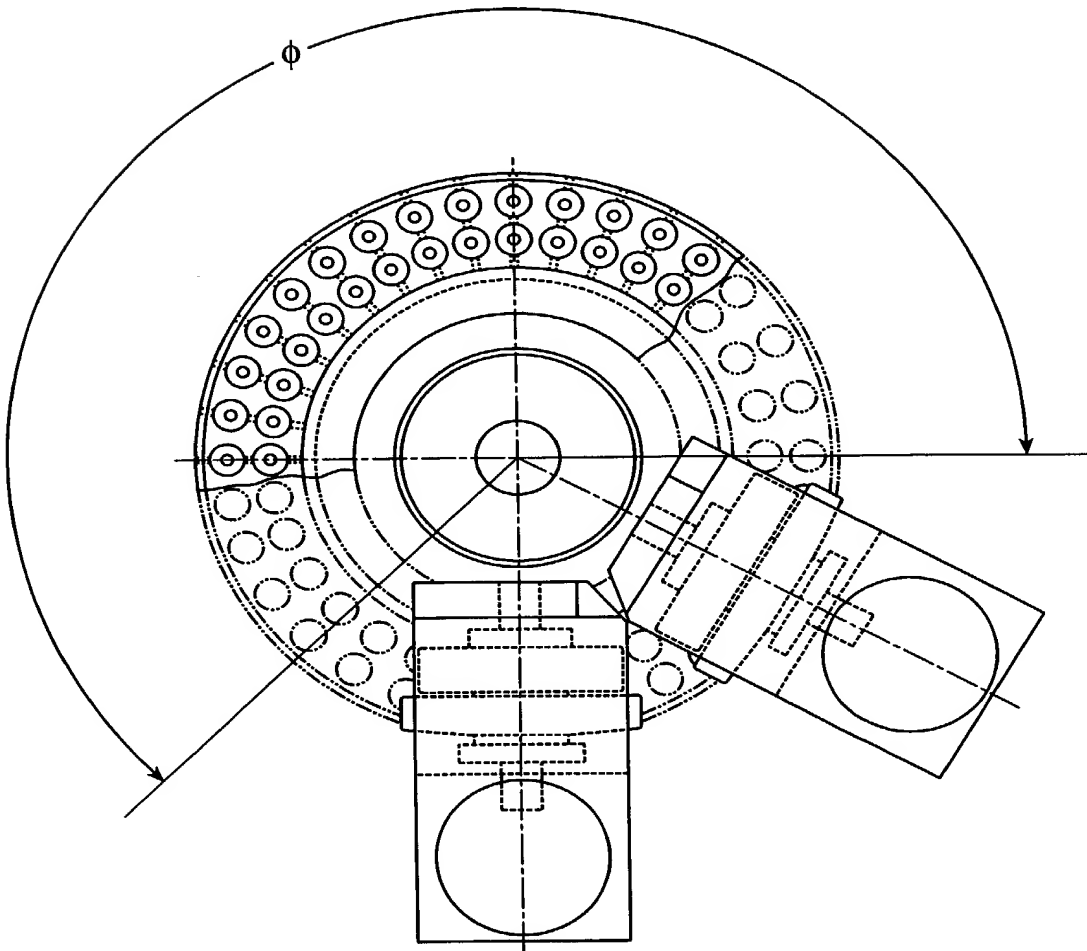DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 16

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 17A

182

182

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
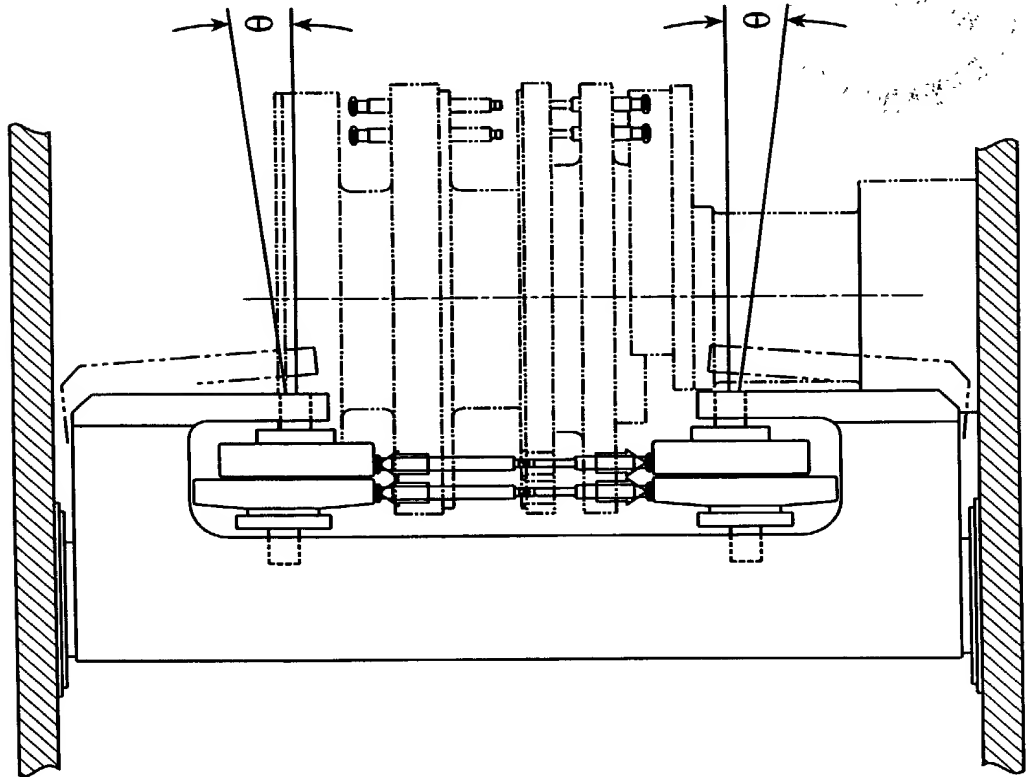
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FIG. 17C

182

182

Δ

Δ

FIG. 17B

182

182

x

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
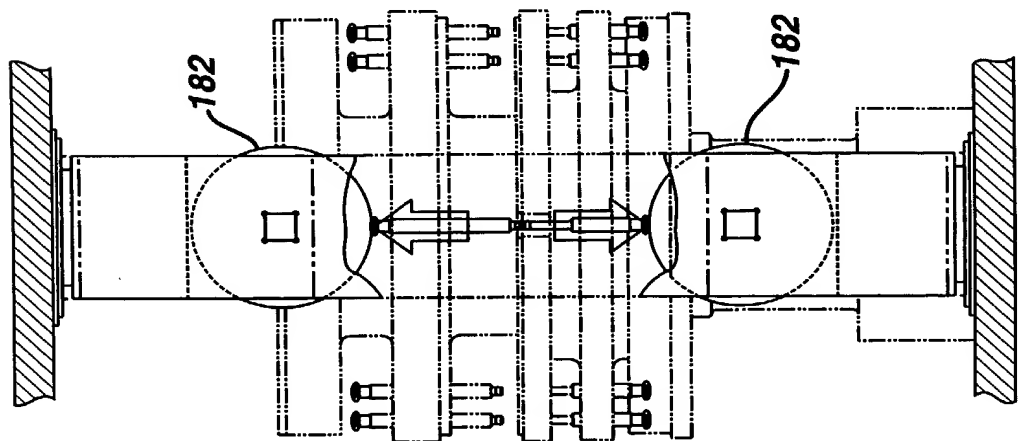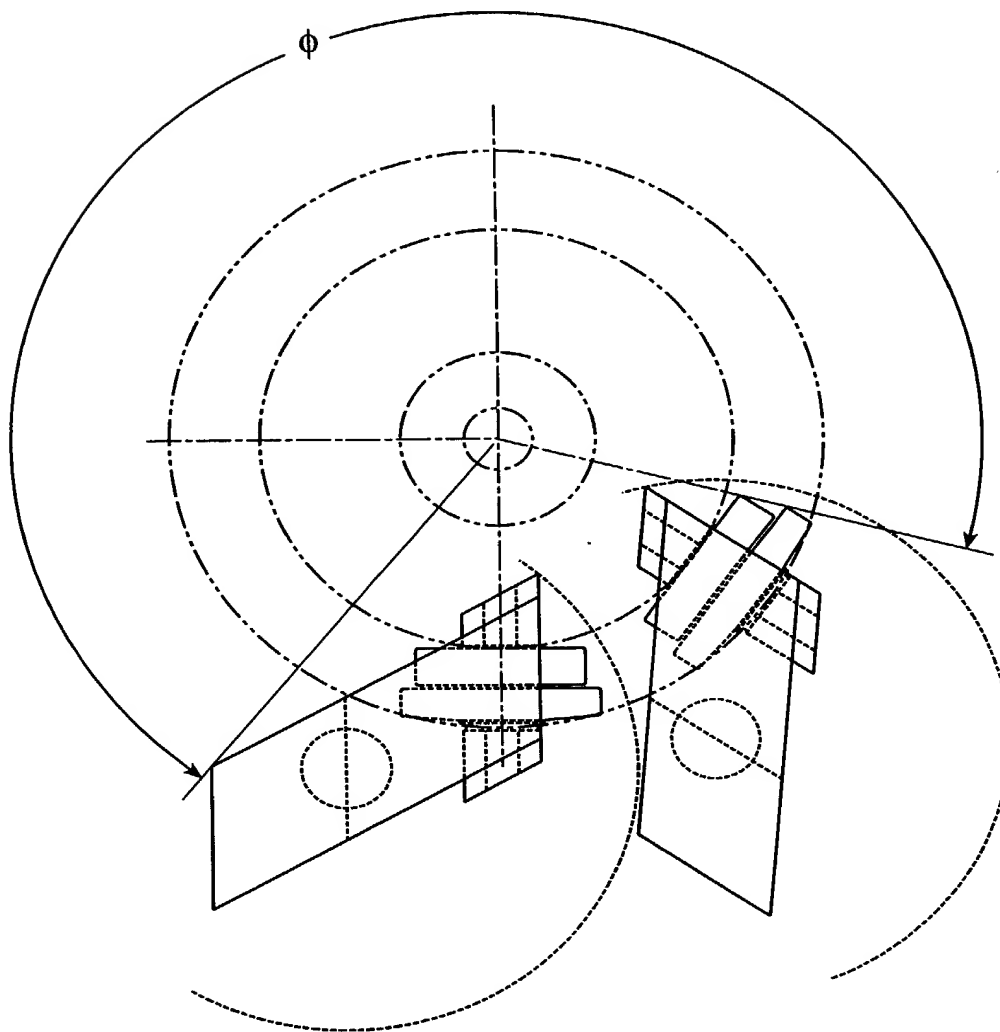DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 18A

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 18C

FIG. 18B

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
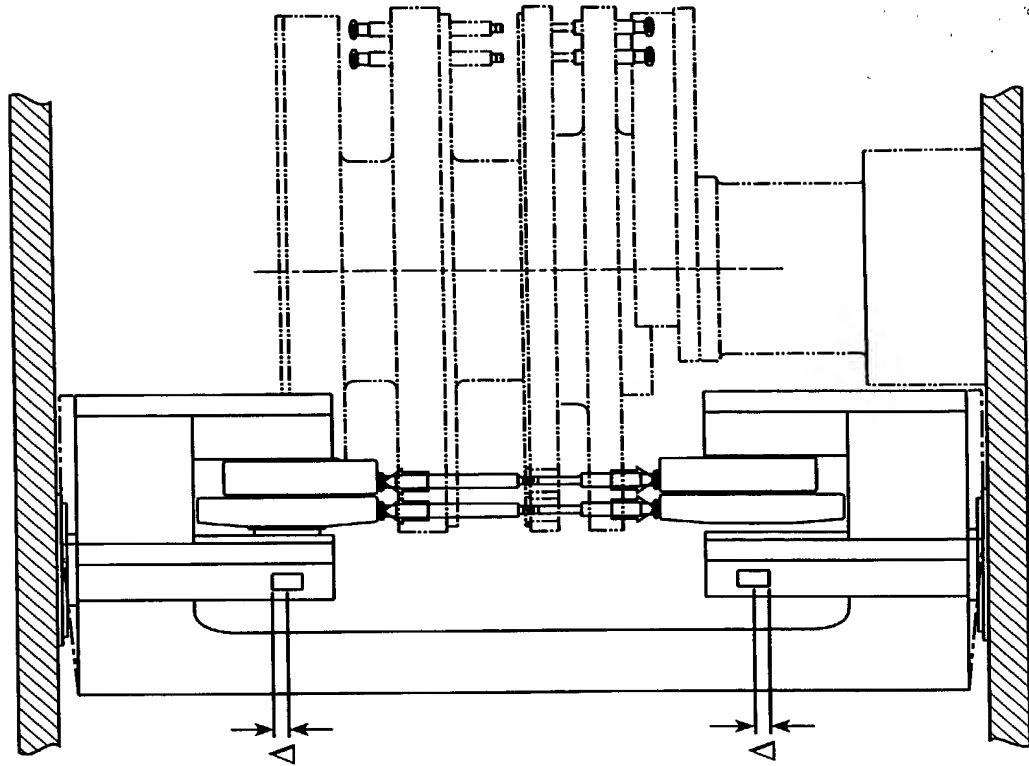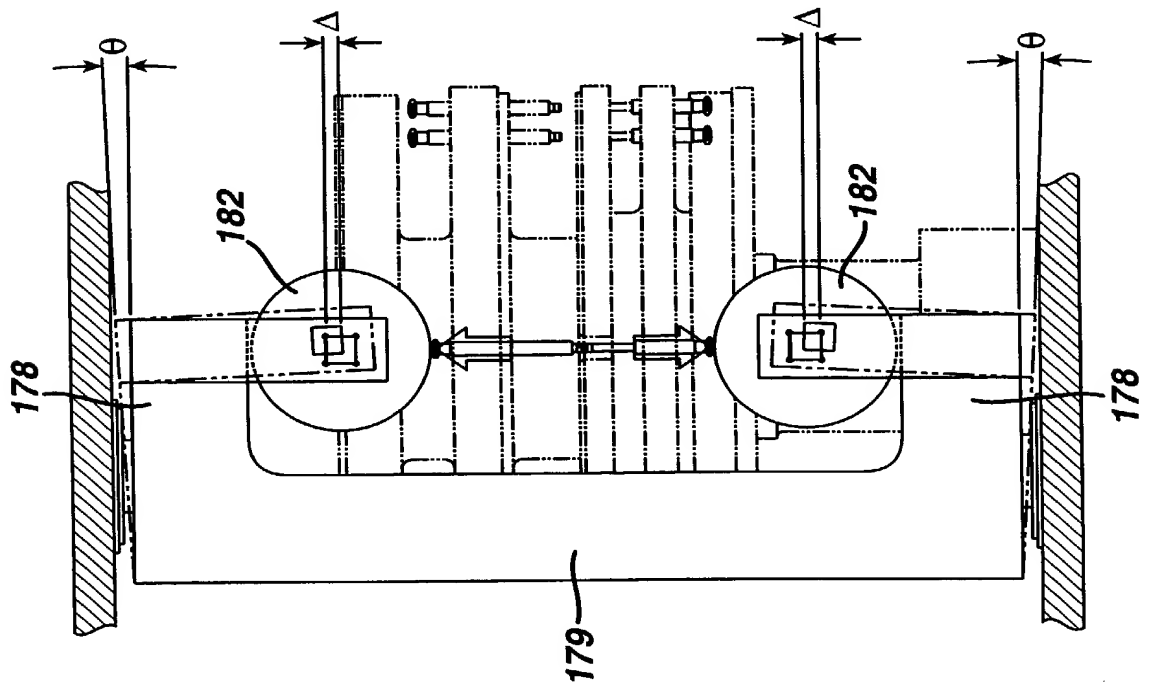
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FIG. 19A

FIG. 19C

FIG. 19B

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
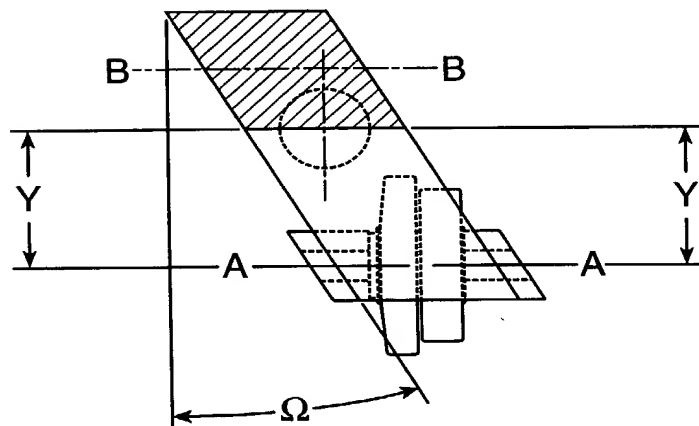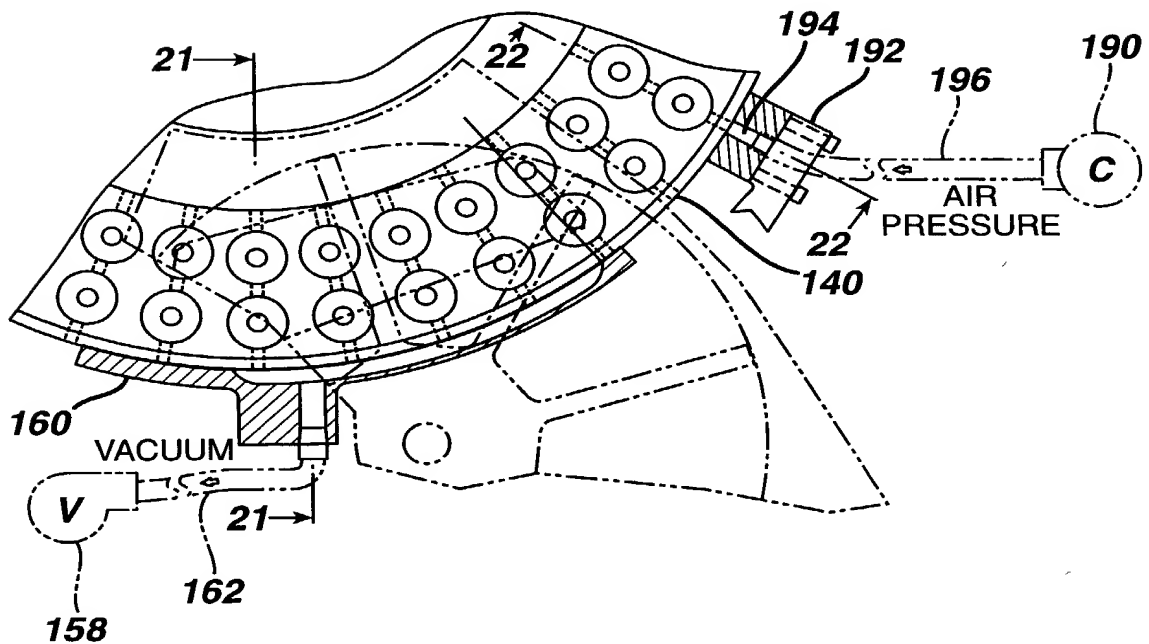DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 19D

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
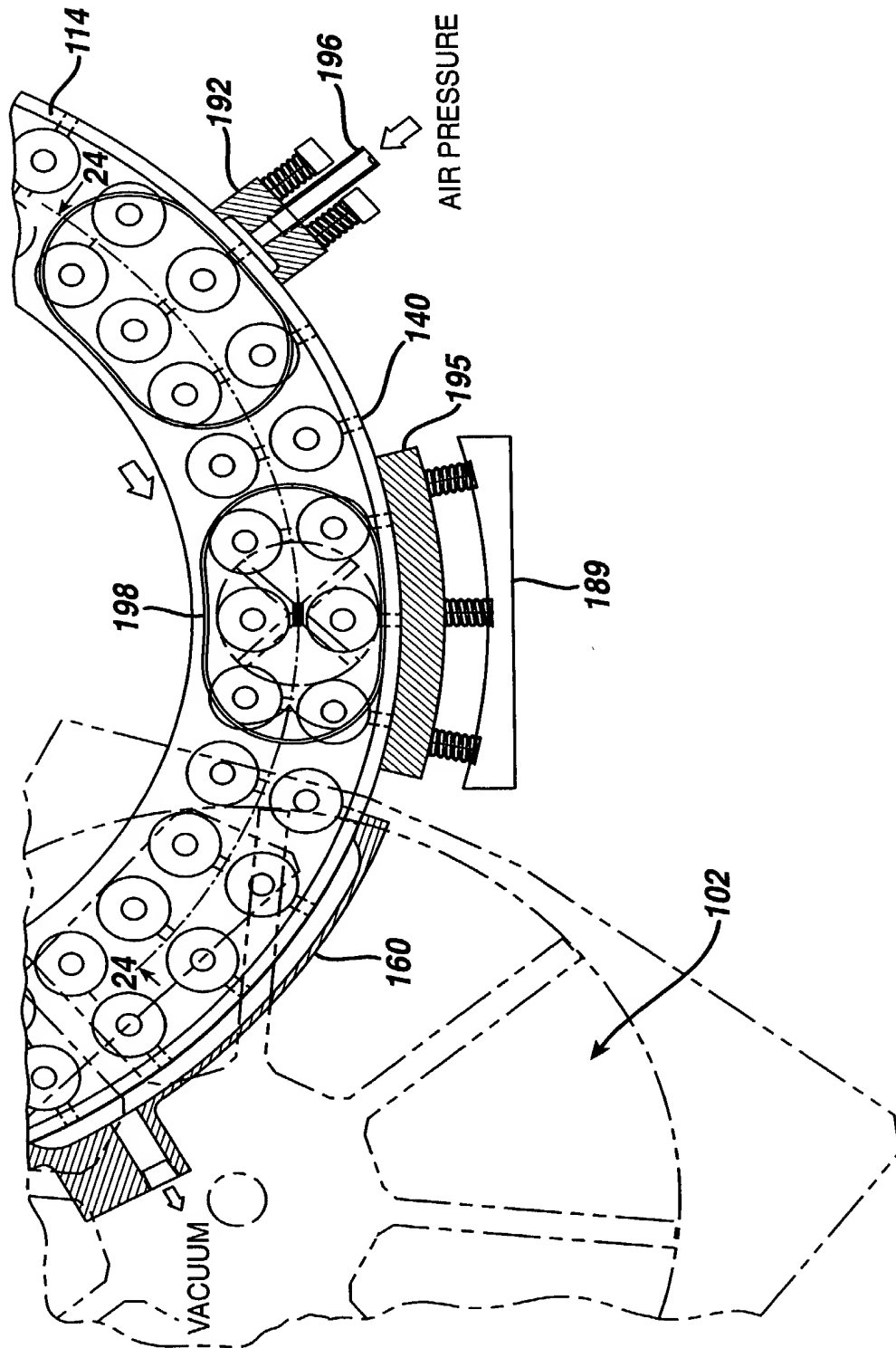DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 20

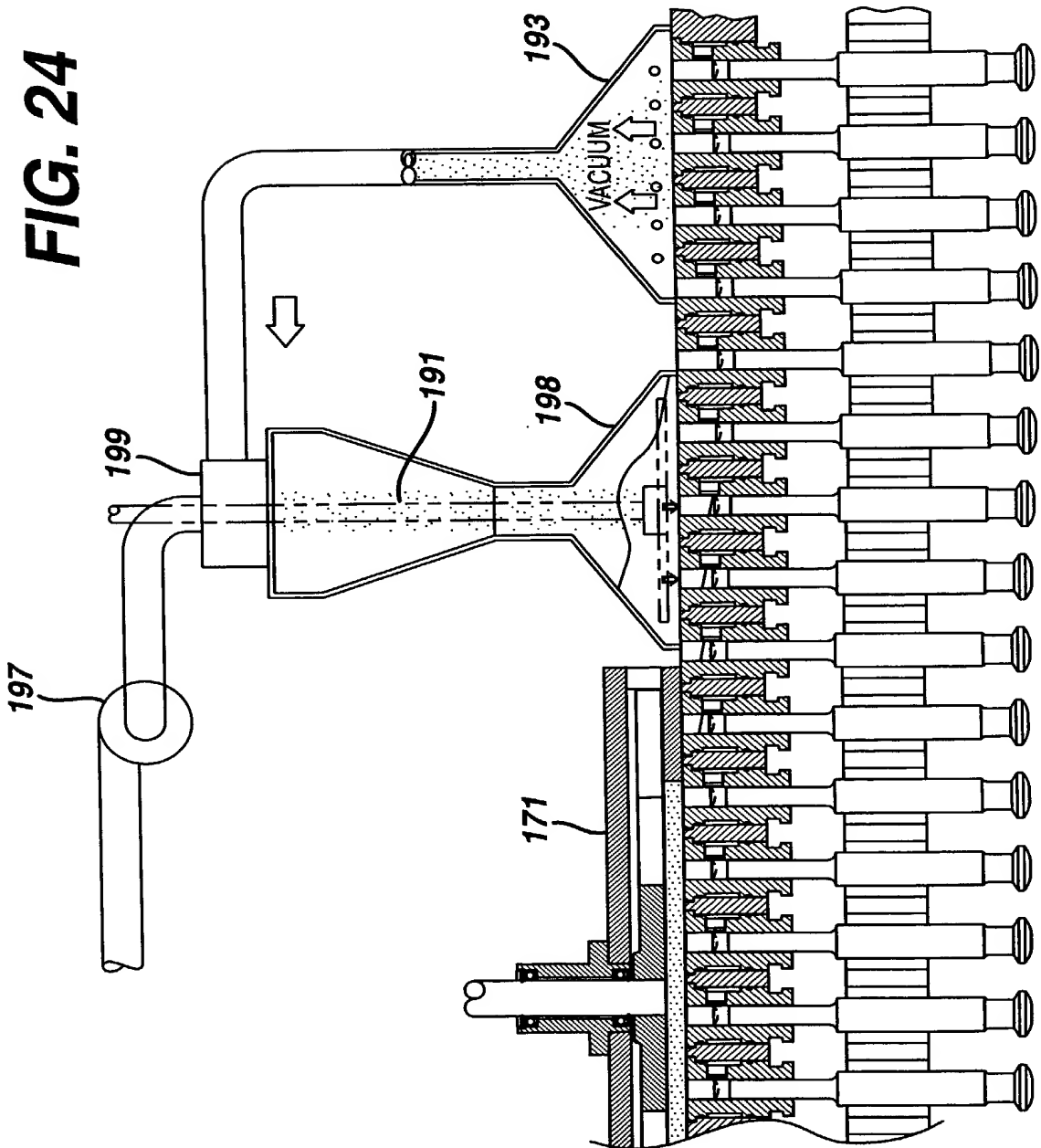## FIG. 21

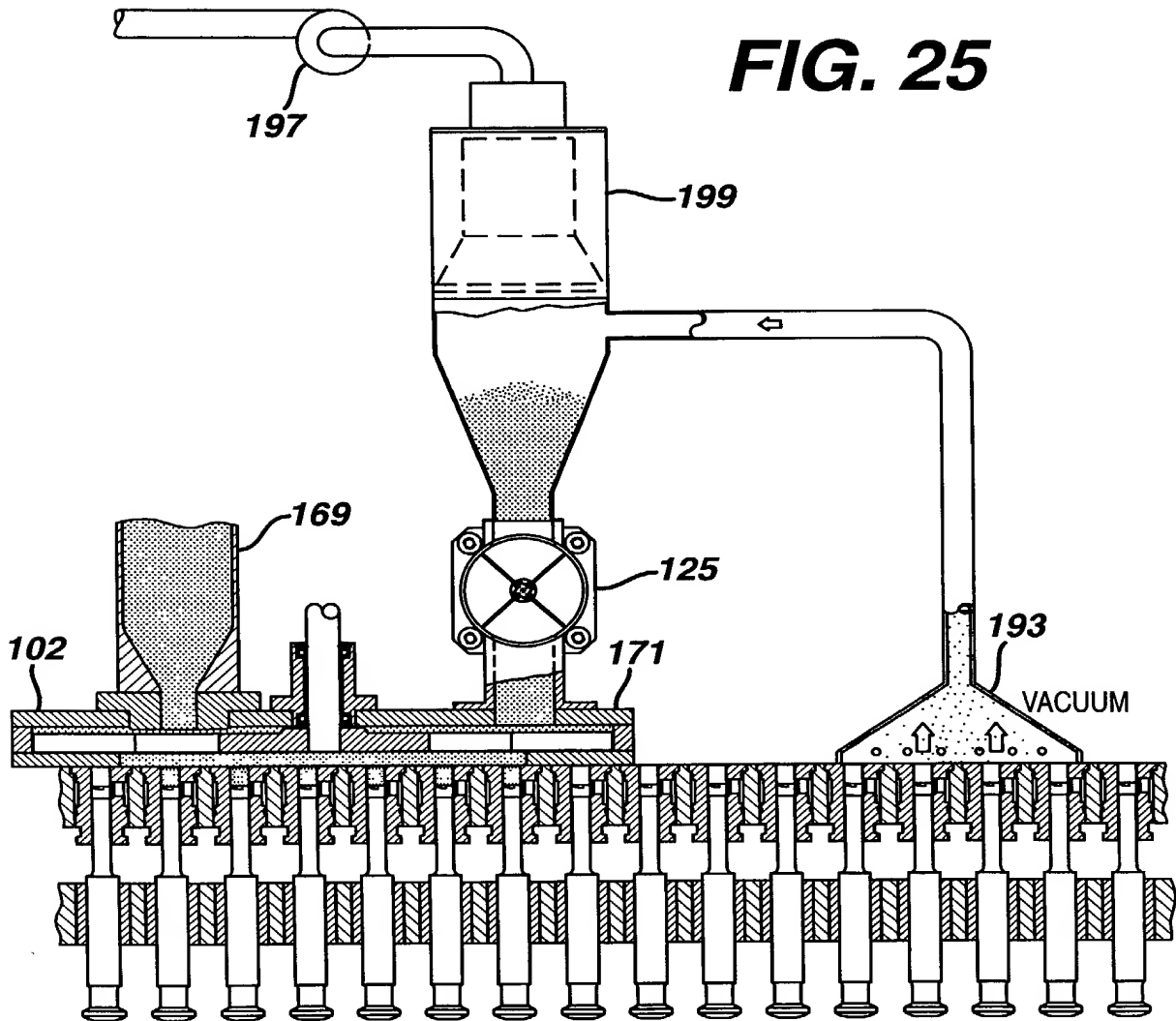## FIG. 22

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 23

FIG. 24

VACUUM

193

191

198

199

197

171

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 25
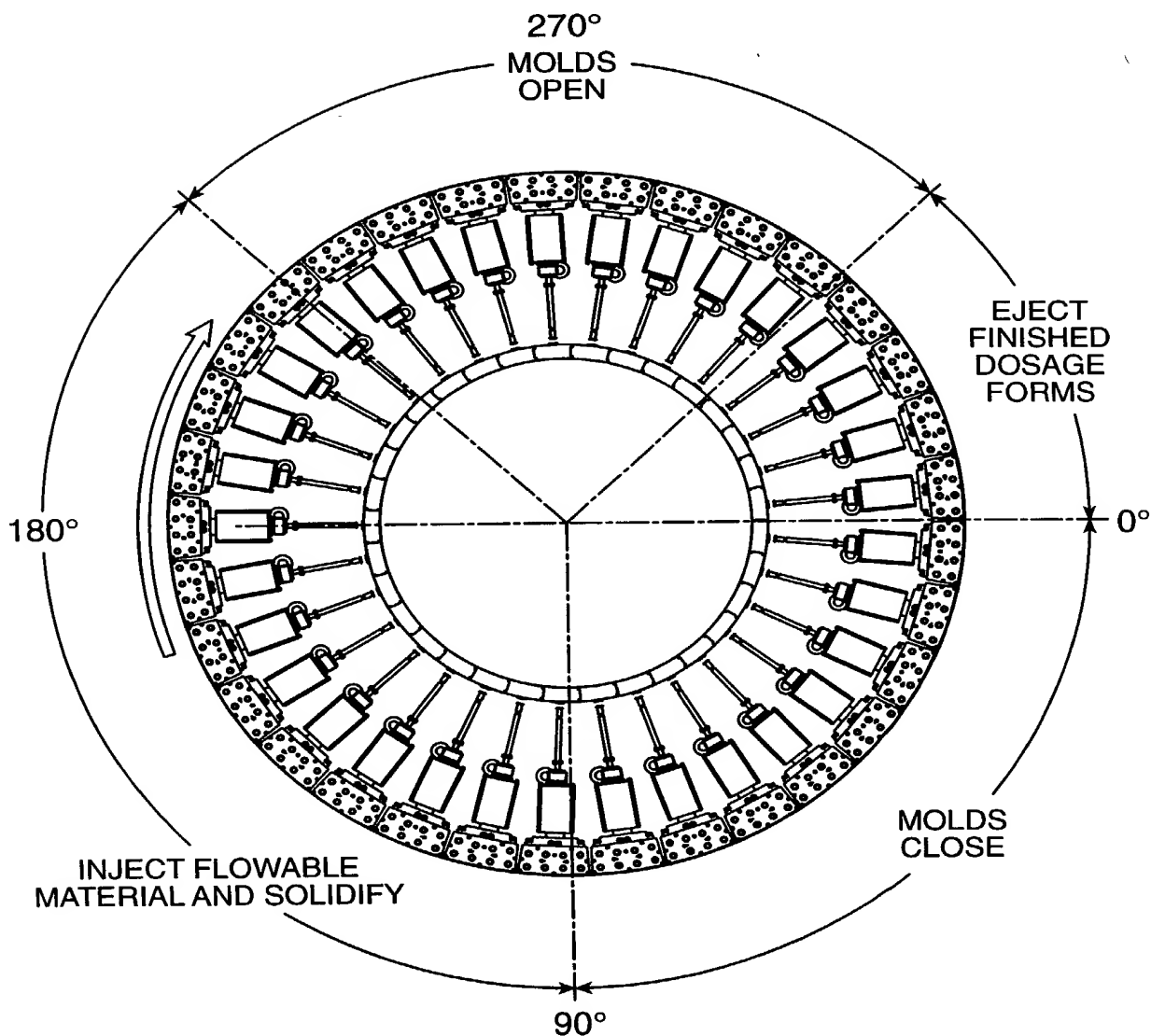
197
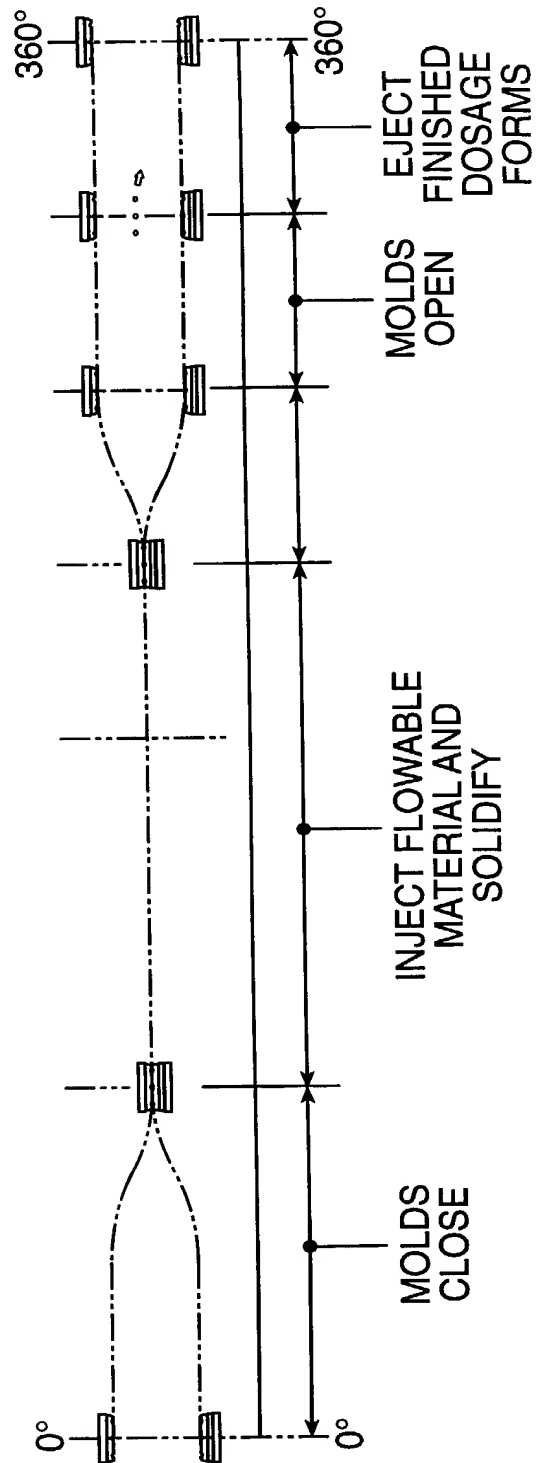
199

169

102

125

171

193

VACUUM
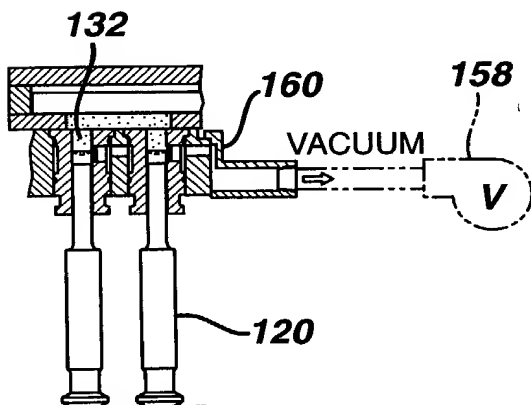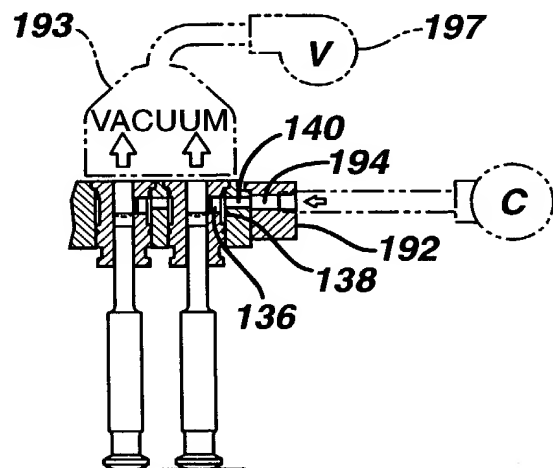
TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 26A

270°
MOLDS
OPEN

EJECT
FINISHED
DOSAGE
FORMS

180°

0°

MOLDS
CLOSE

INJECT FLOWABLE
MATERIAL AND SOLIDIFY

90°

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
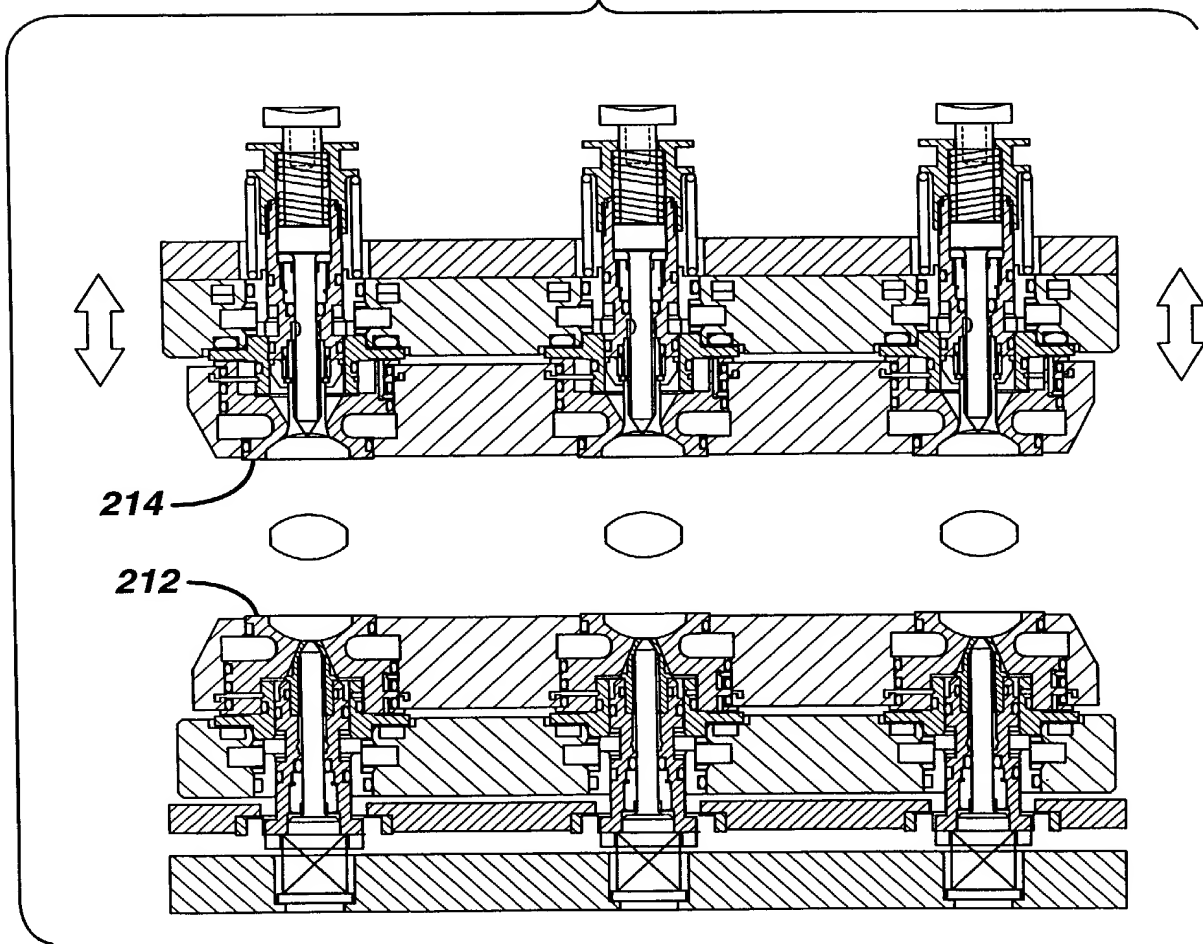DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 26B

360°

360°

EJECT
FINISHED
DOSAGE
FORMS

MOLDS
OPEN

INJECT FLOWABLE
MATERIAL AND
SOLIDIFY

MOLDS
CLOSE

0°

0°

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
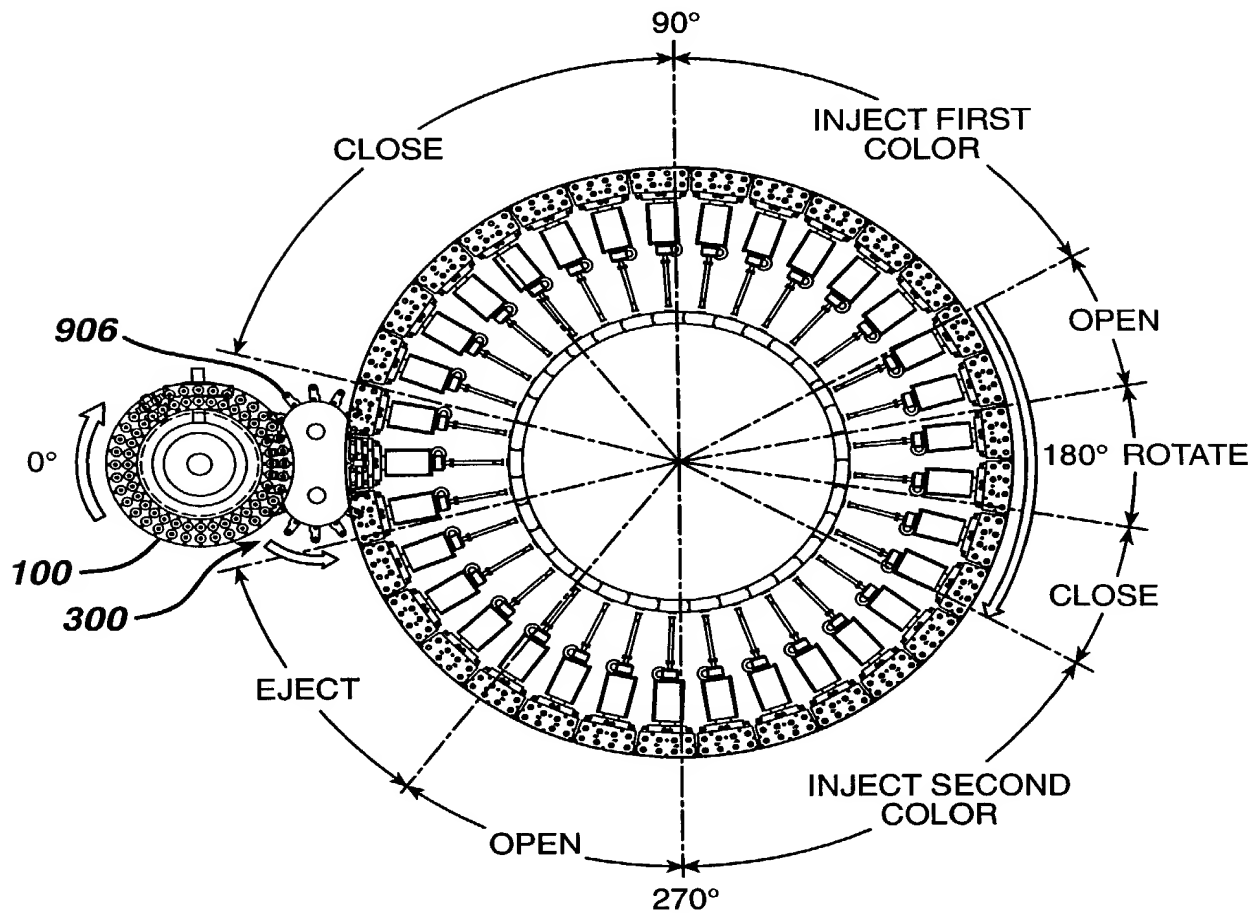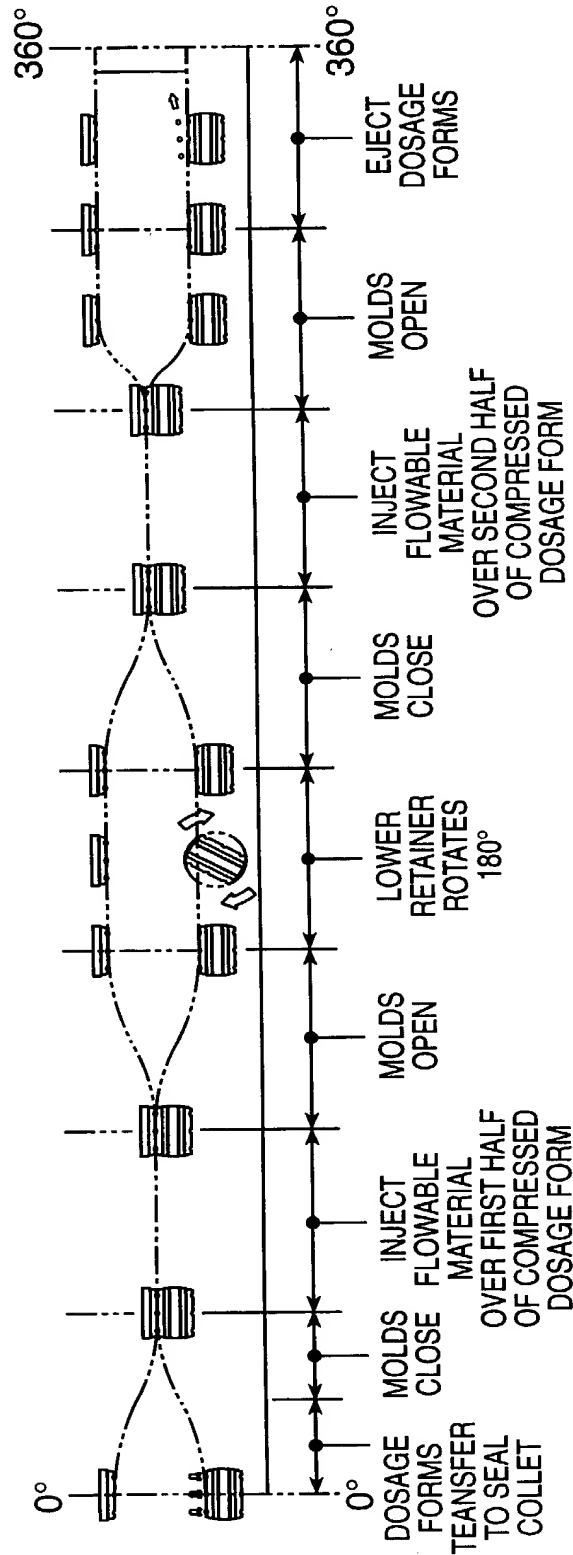DOCKET #: MCP-0242   CUST. #: 000027777
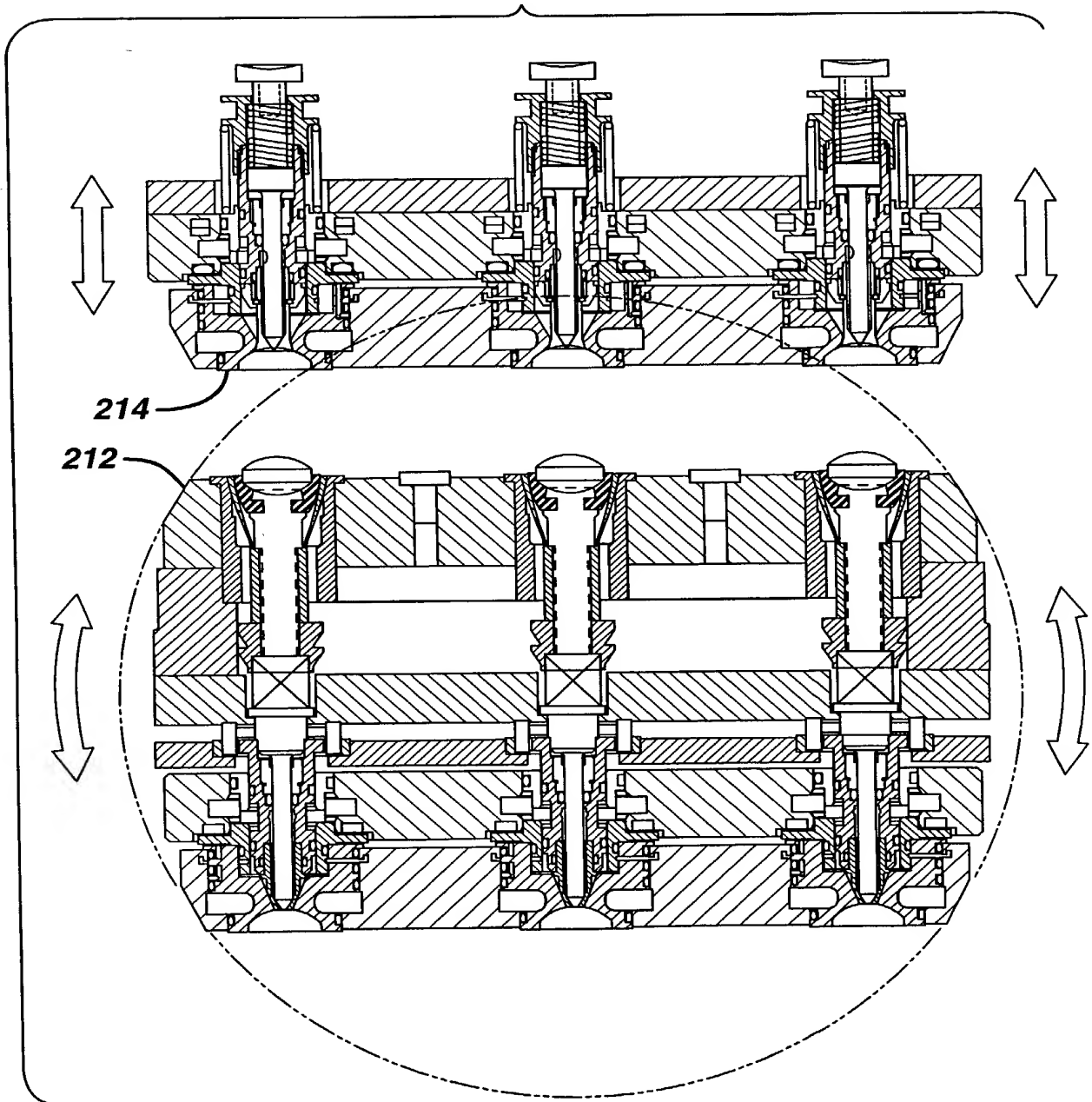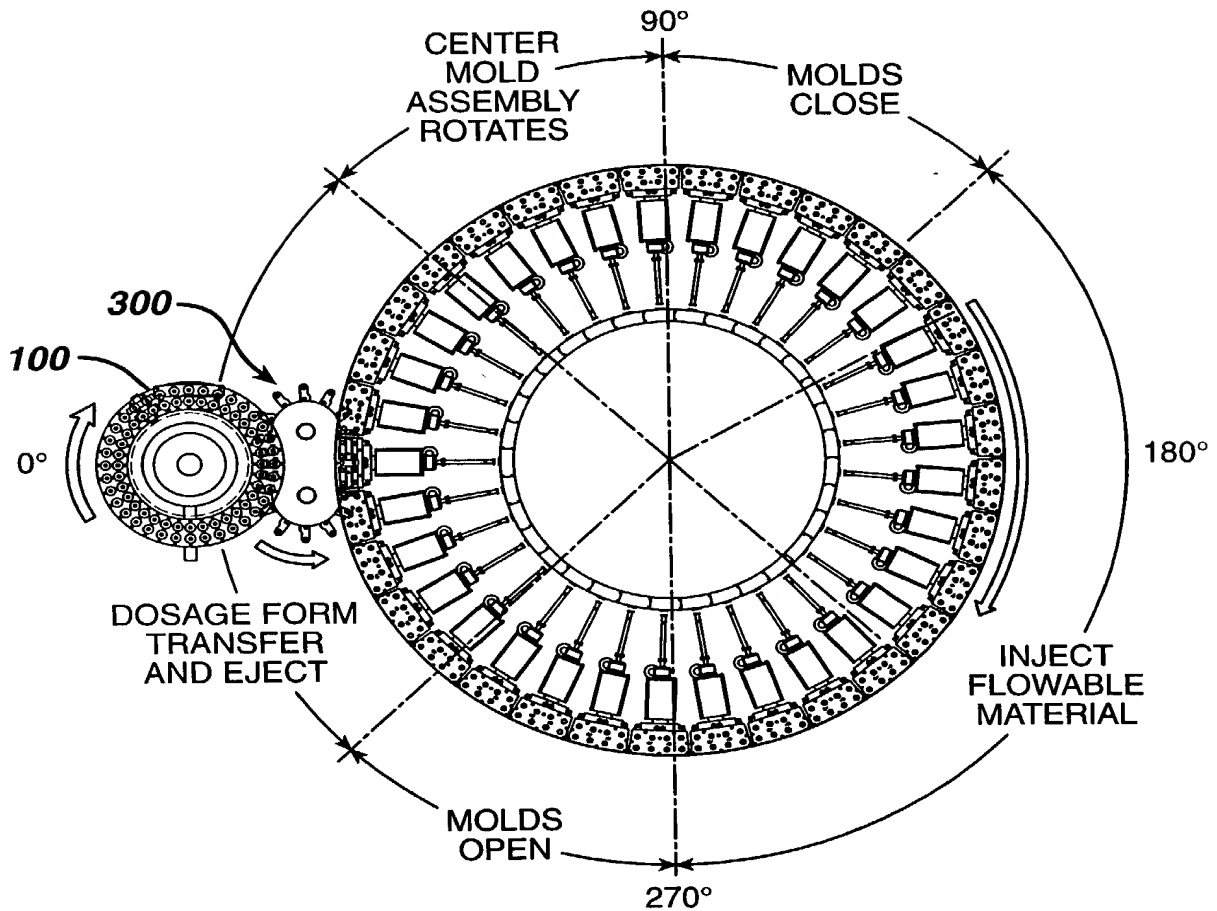
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FIG. 26C

214

212

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 27A

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
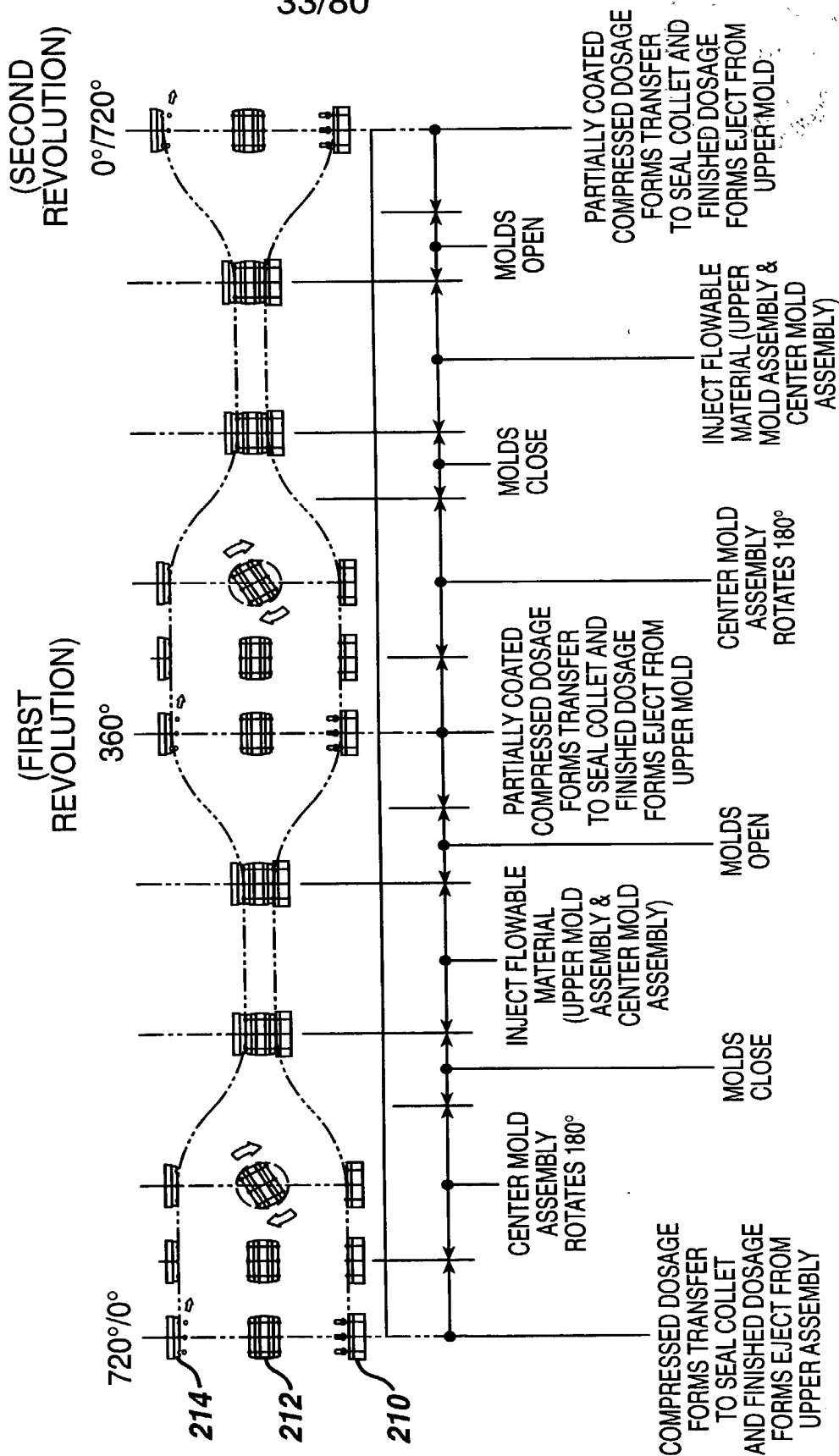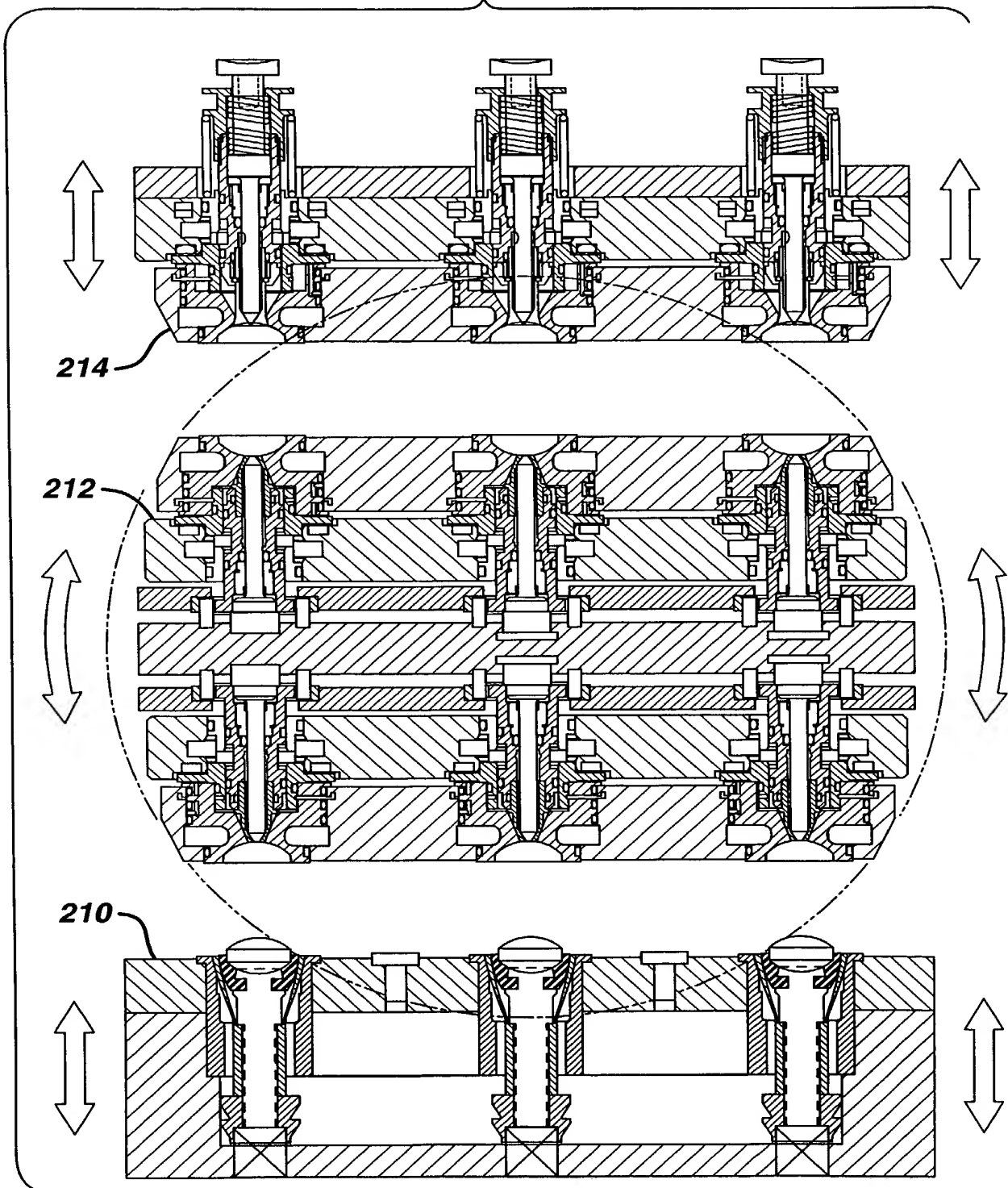DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 27B

DOSAGE FORMS TRANSFER TO SEAL COLLET | MOLDS CLOSE | INJECT FLOWABLE MATERIAL OVER FIRST HALF OF COMPRESSED DOSAGE FORM | MOLDS OPEN | LOWER RETAINER ROTATES 180° | MOLDS CLOSE | INJECT FLOWABLE MATERIAL OVER SECOND HALF OF COMPRESSED DOSAGE FORM | MOLDS OPEN | EJECT DOSAGE FORMS
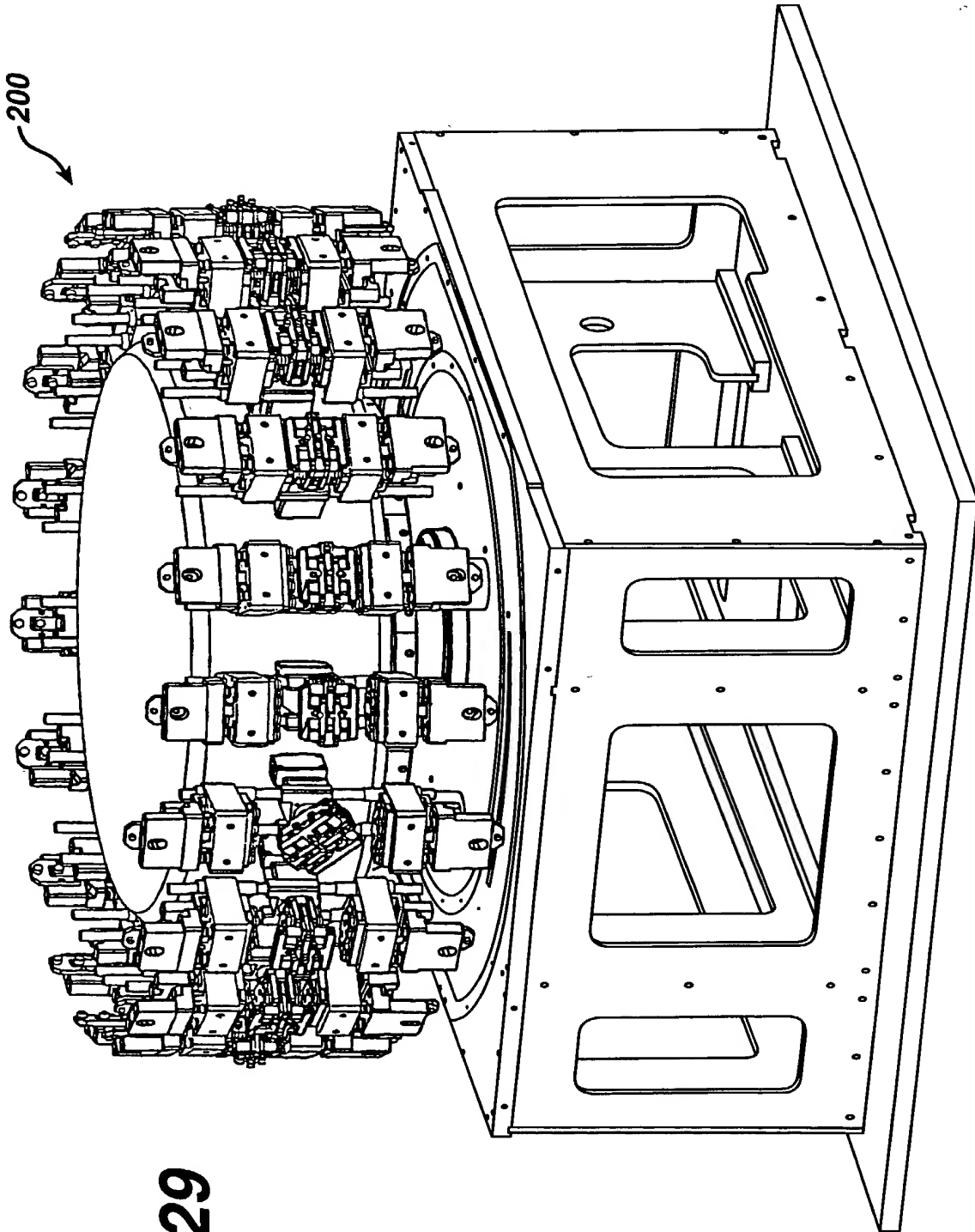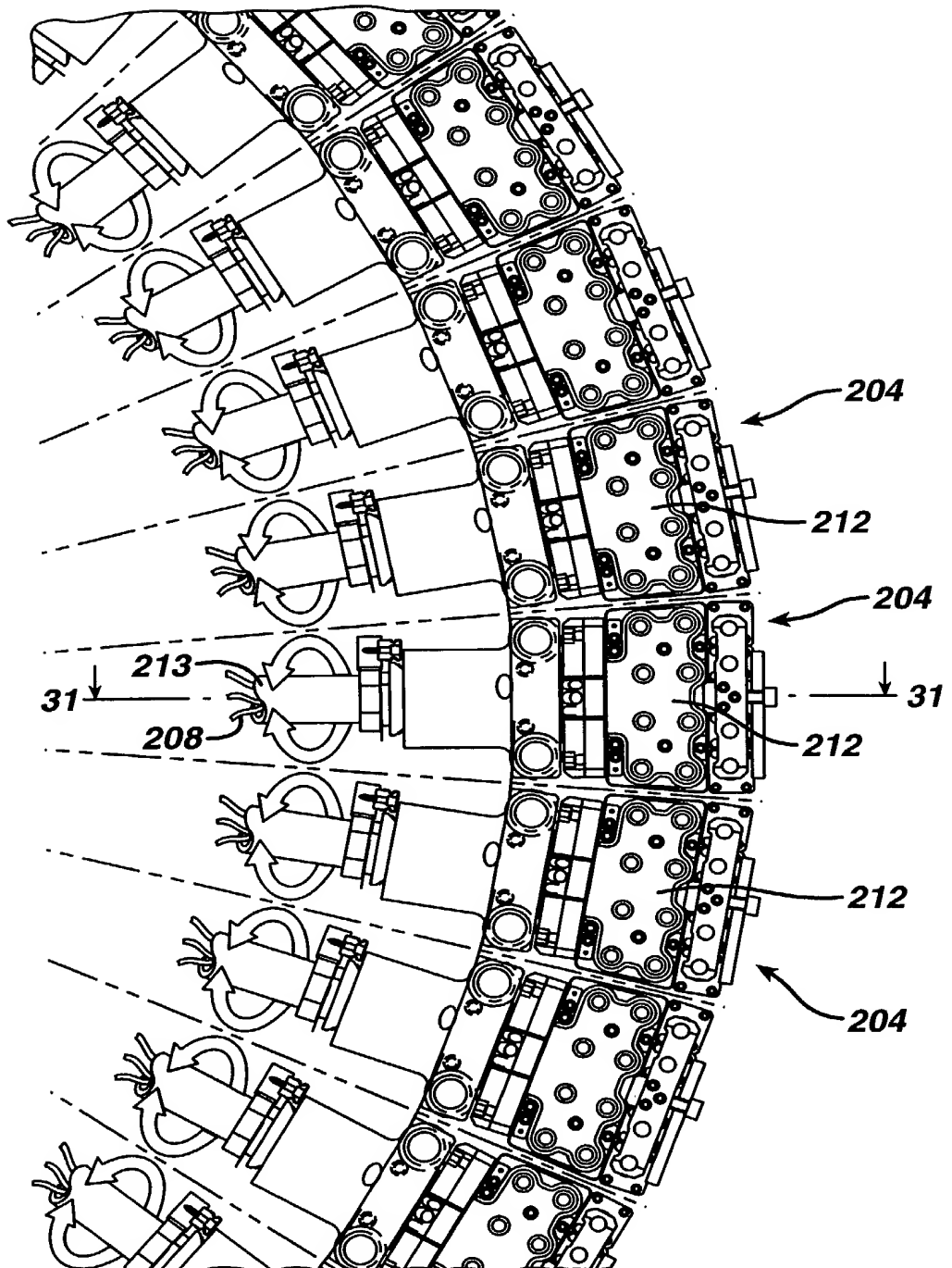
0°   360°

FIG. 27C

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777
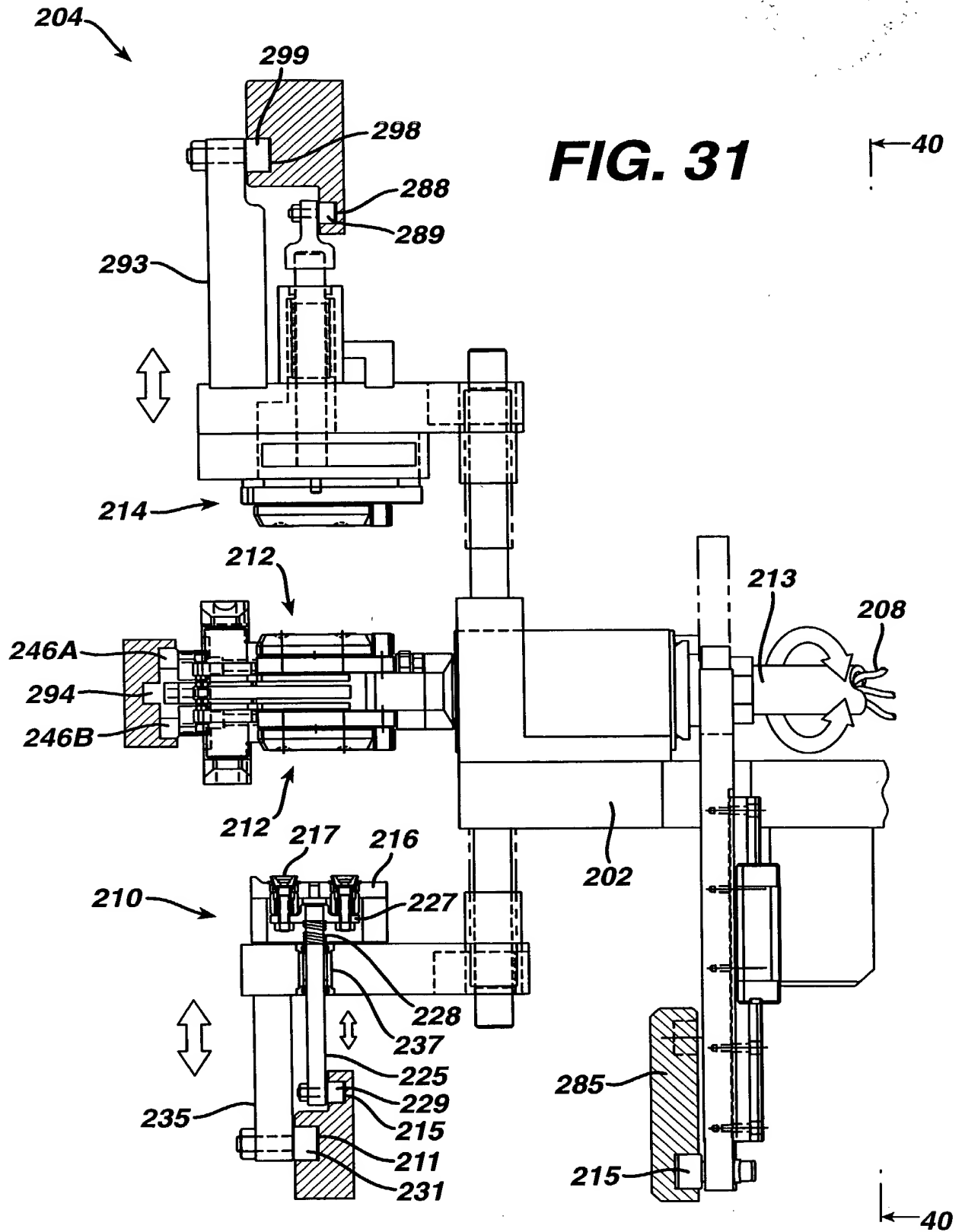
32/80

FIG. 28A

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
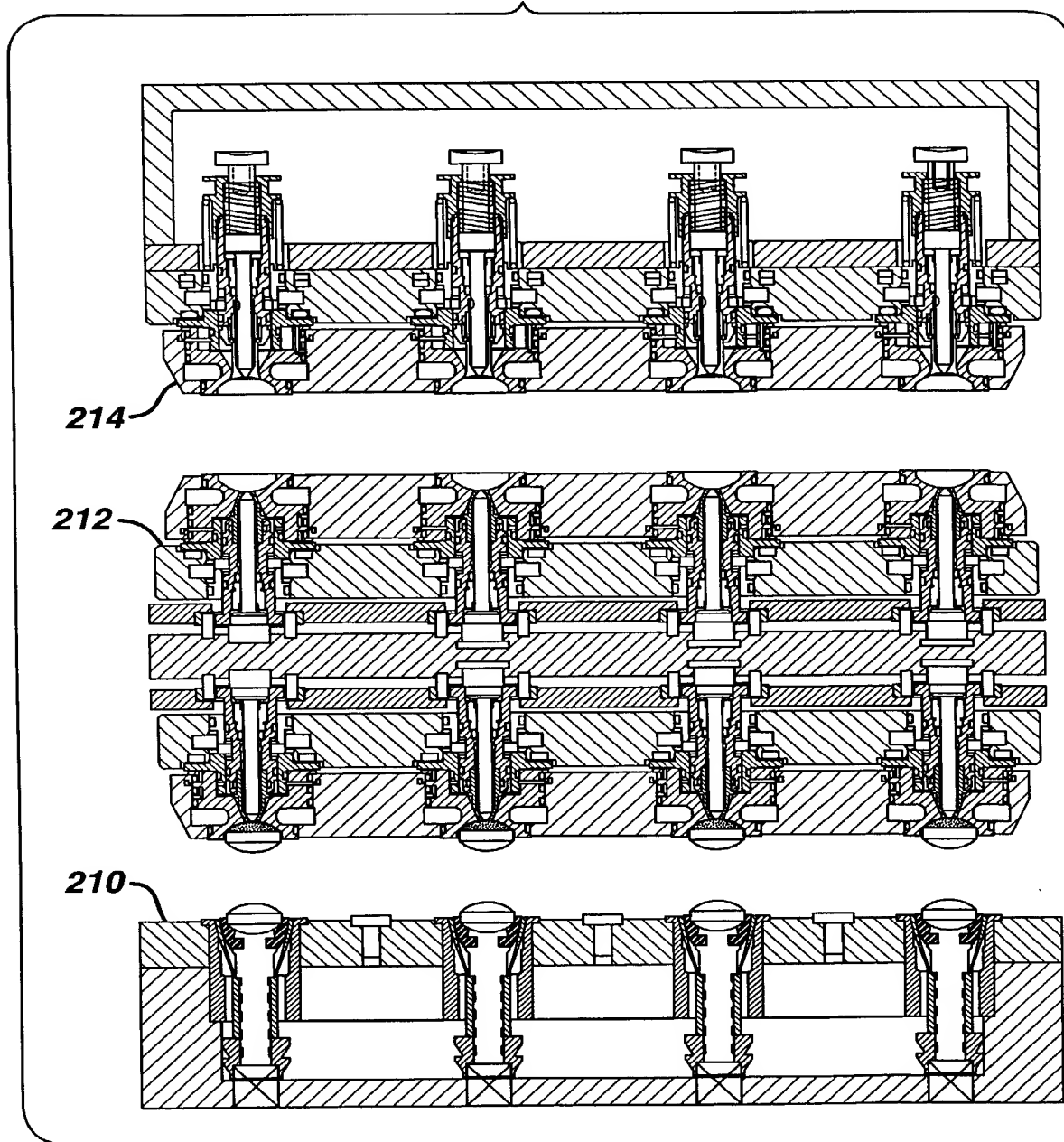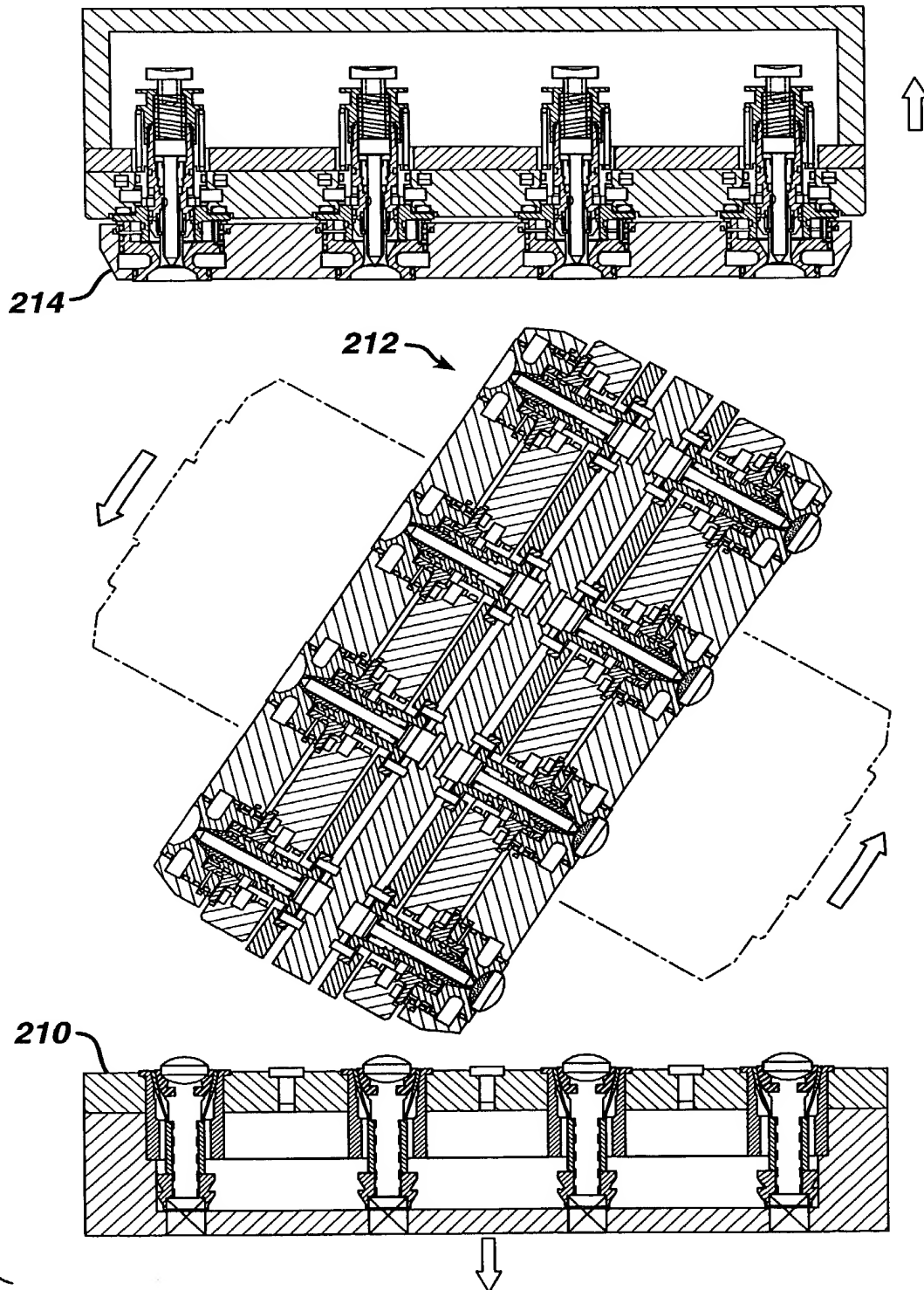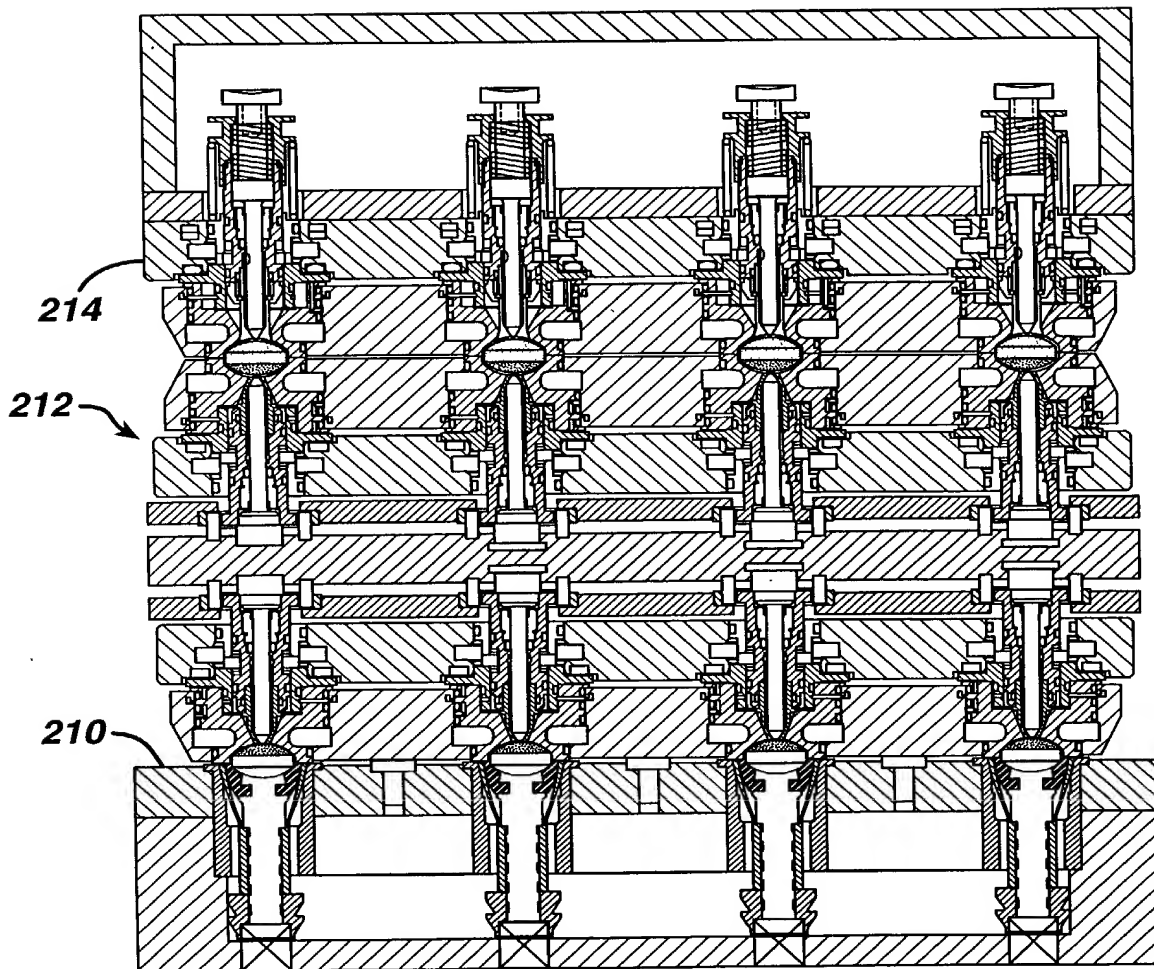DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 28B

(SECOND REVOLUTION) 0°/720°

(FIRST REVOLUTION) 360°

720°/0°

214

212

210

MOLDS OPEN

MOLDS CLOSE

MOLDS OPEN

MOLDS CLOSE

PARTIALLY COATED COMPRESSED DOSAGE FORMS TRANSFER TO SEAL COLLET AND FINISHED DOSAGE FORMS EJECT FROM UPPER MOLD

INJECT FLOWABLE MATERIAL (UPPER MOLD ASSEMBLY & CENTER MOLD ASSEMBLY)

CENTER MOLD ASSEMBLY ROTATES 180°

PARTIALLY COATED COMPRESSED DOSAGE FORMS TRANSFER TO SEAL COLLET AND FINISHED DOSAGE FORMS EJECT FROM UPPER MOLD

INJECT FLOWABLE MATERIAL (UPPER MOLD ASSEMBLY & CENTER MOLD ASSEMBLY)

CENTER MOLD ASSEMBLY ROTATES 180°

COMPRESSED DOSAGE FORMS TRANSFER TO SEAL COLLET AND FINISHED DOSAGE FORMS EJECT FROM UPPER ASSEMBLY

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
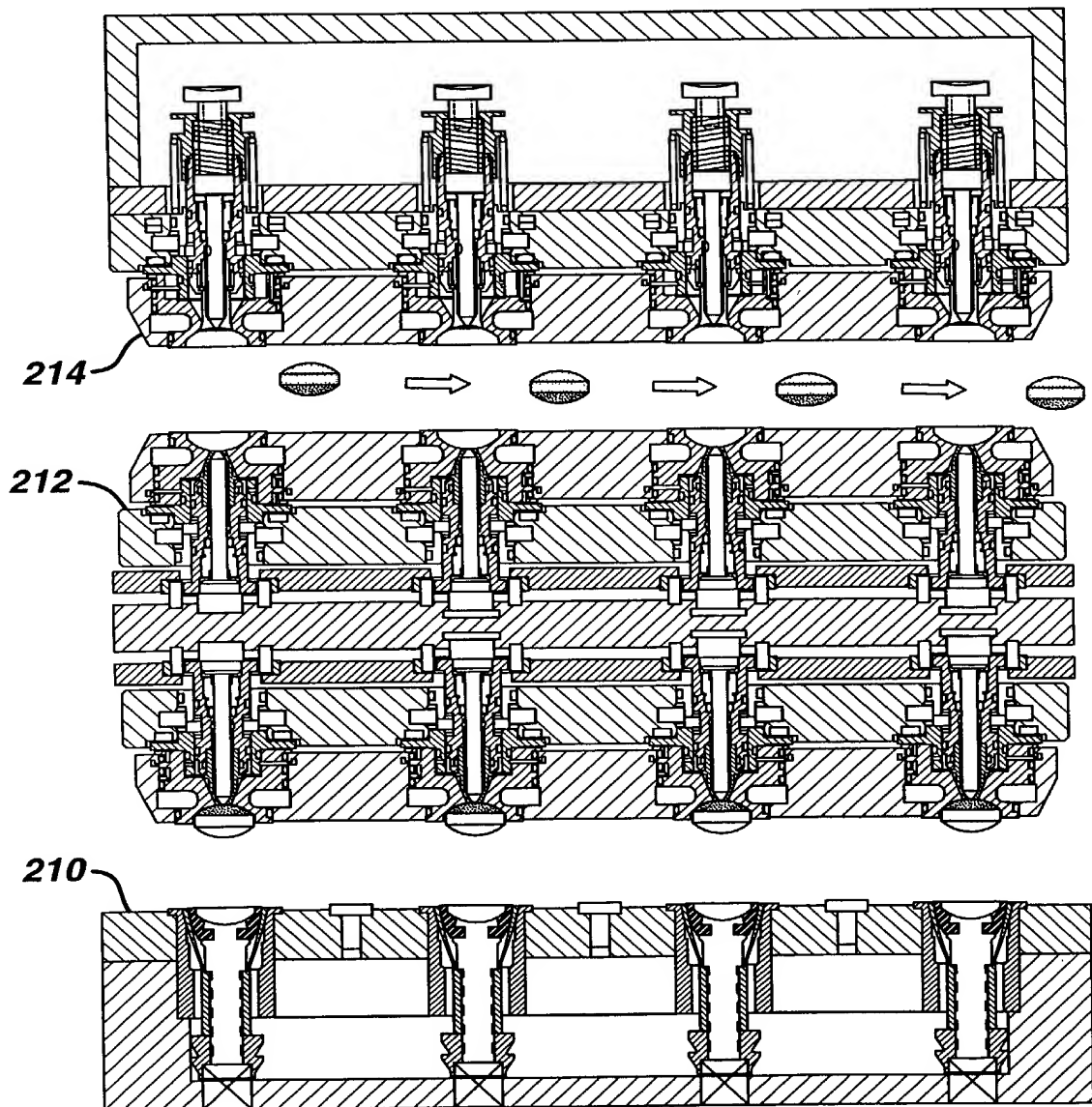DOCKET #: MCP-0242   CUST. #: 000027777

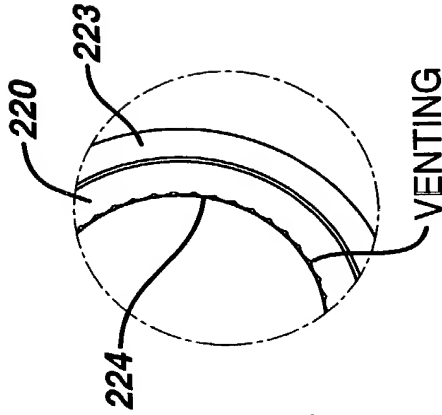34/80

FIG. 28C

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
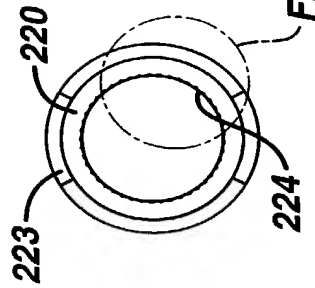DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 29

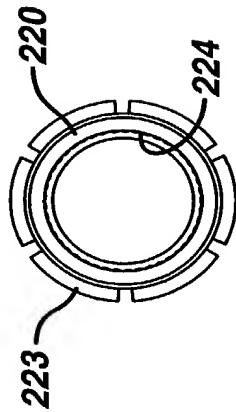TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 30

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
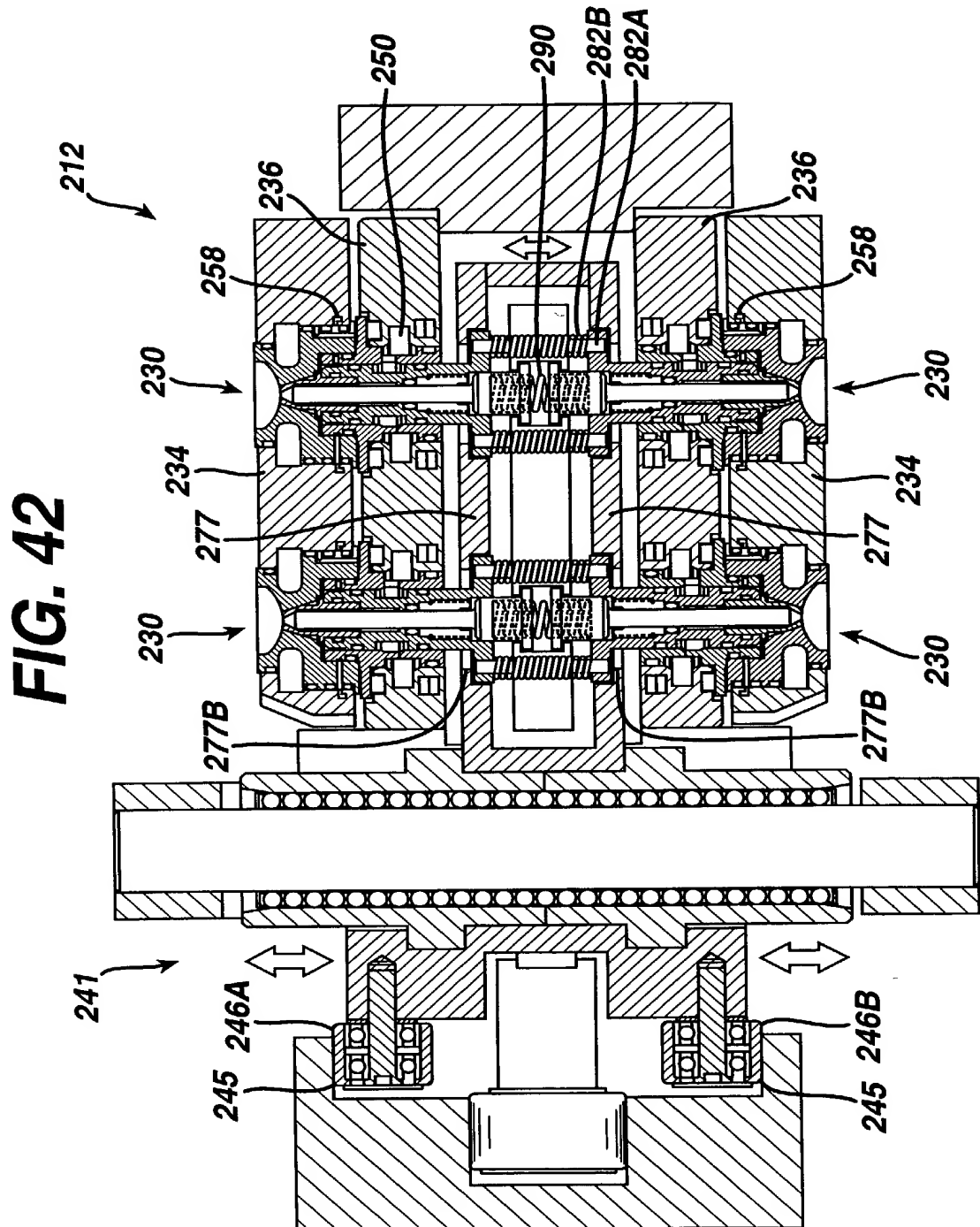
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FIG. 31

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242 CUST. #: 000027777

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FIG. 32
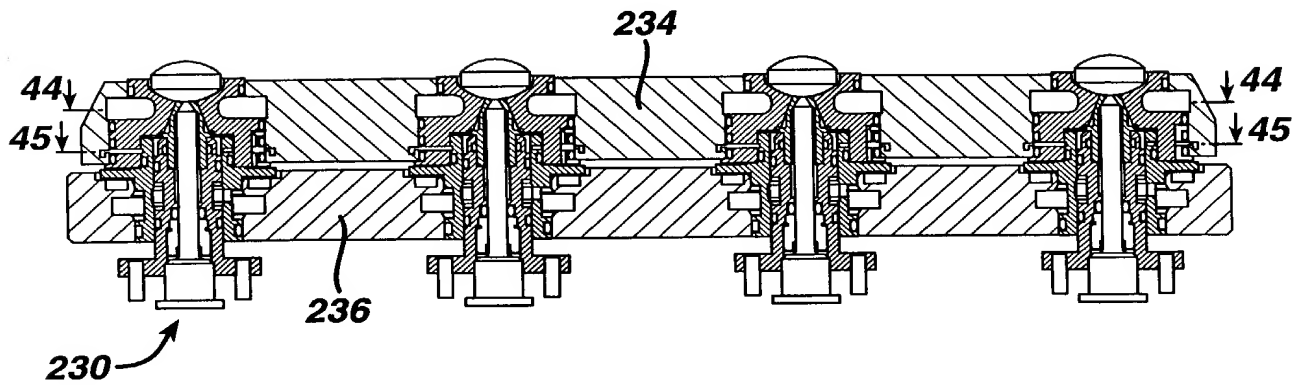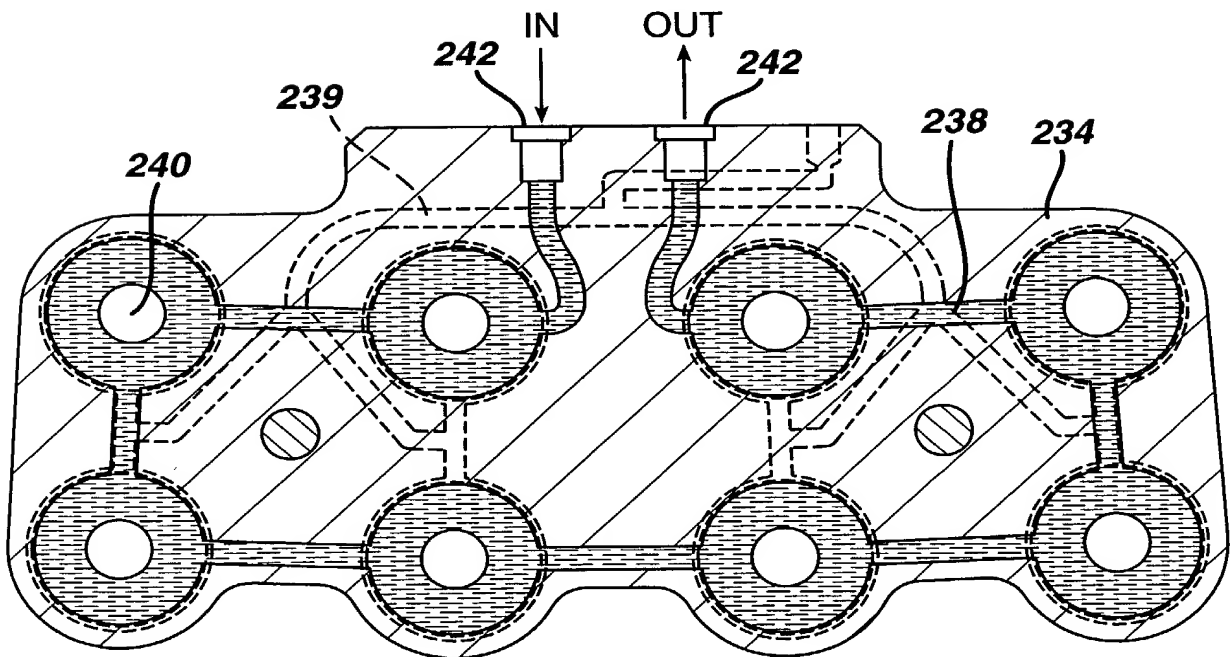
TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 33

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 34

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
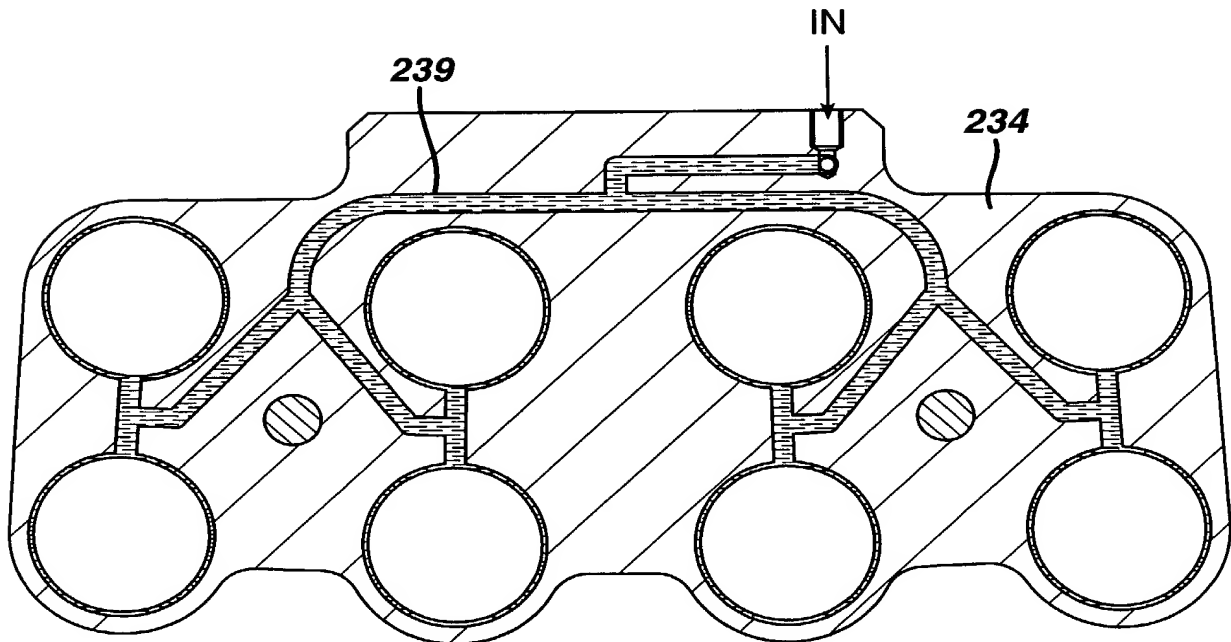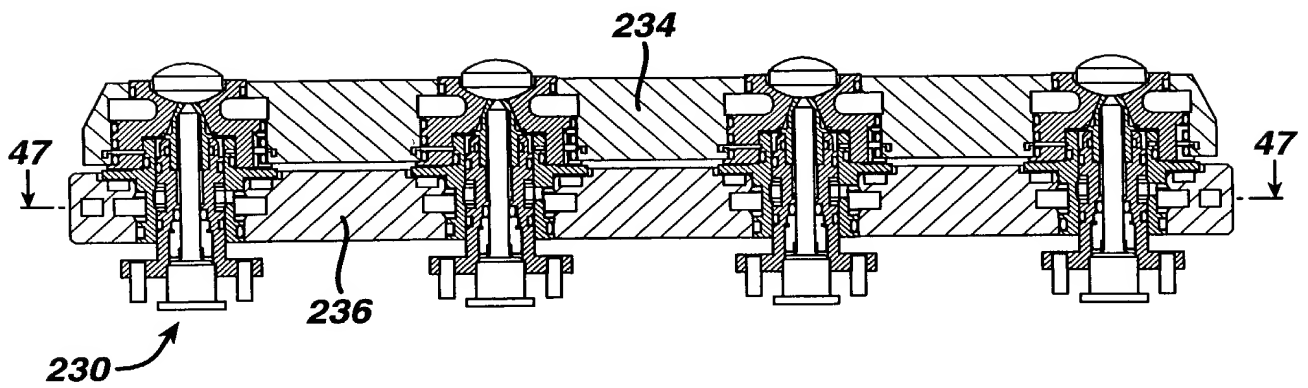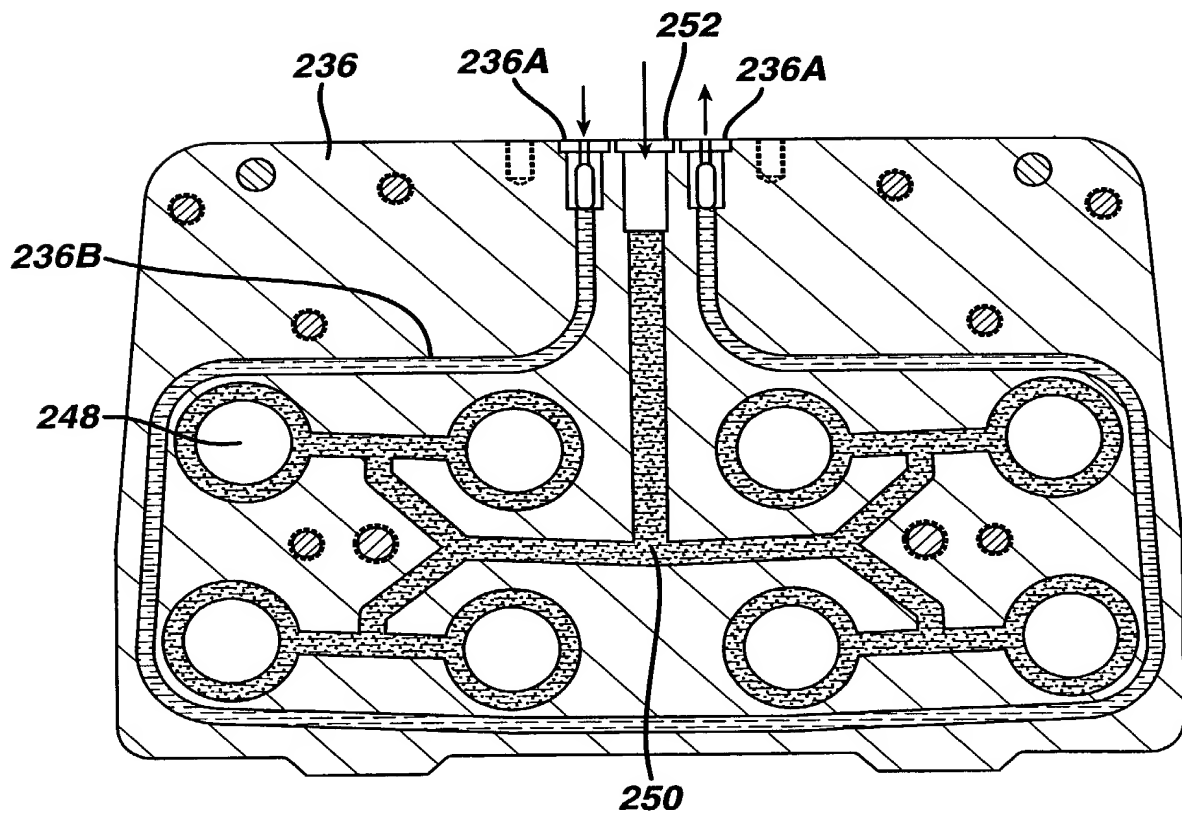DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 35

214

212

210

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FIG. 39A

220
223
224
VENTING

FIG. 39

220
223
224
FIG. 39A

FIG. 37

216
218
220
222
12
226
223
227
CLOSED

FIG. 38

220
223
224

FIG. 36

223
220
222
12
226
218
227
OPEN

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
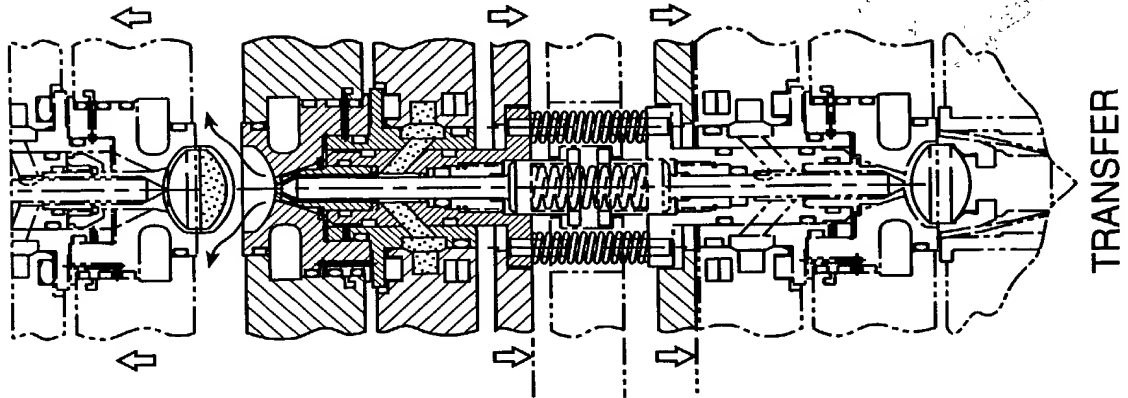DOCKET #: MCP-0242   CUST. #:   000027777
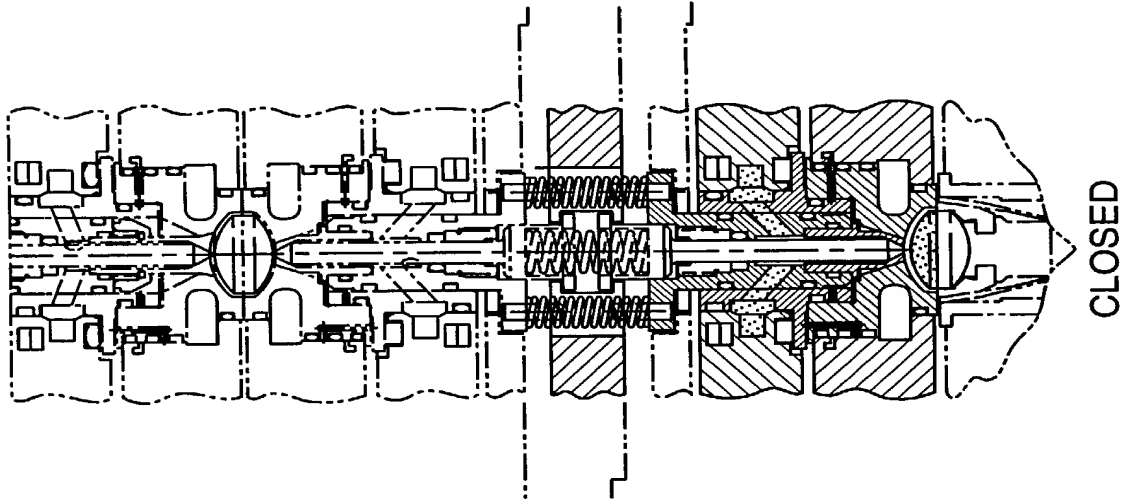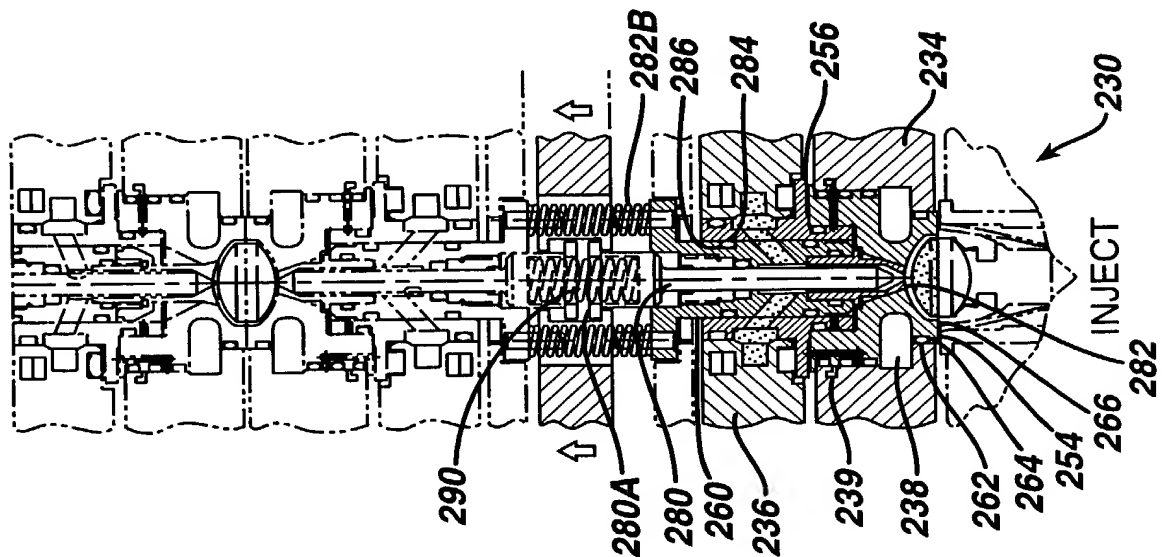
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FIG. 40

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777
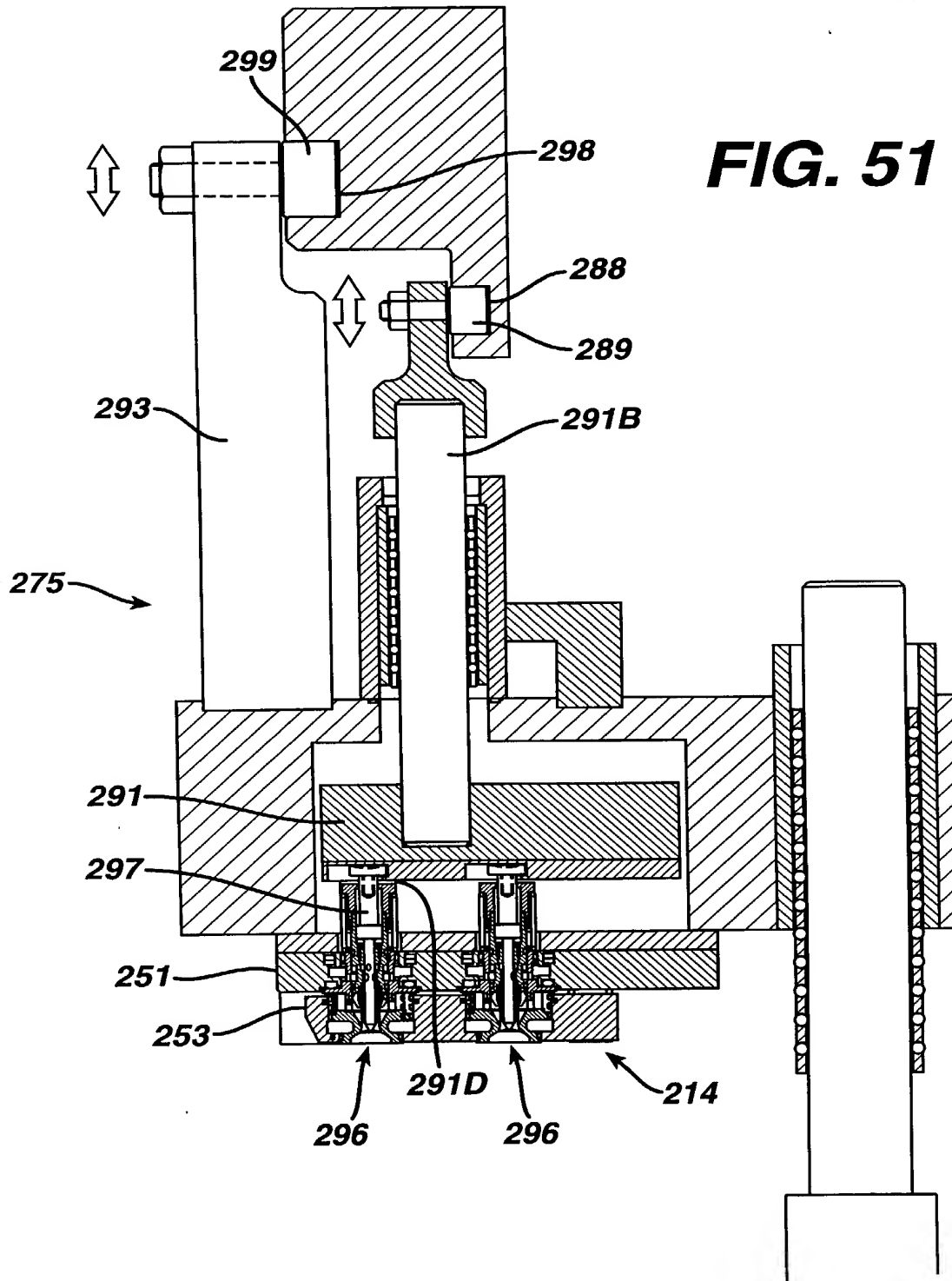
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FIG. 41

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 42

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 43
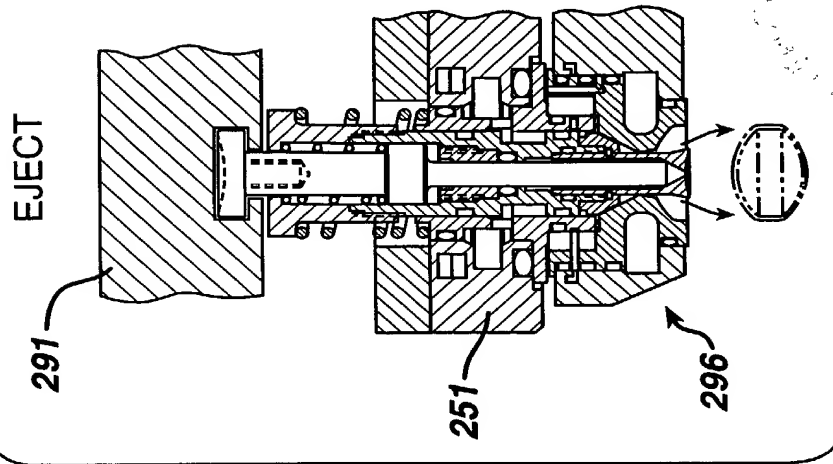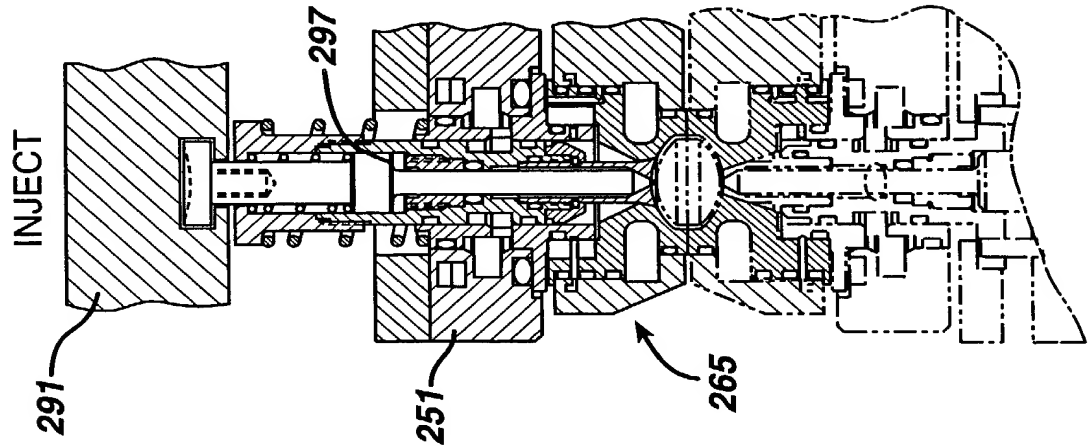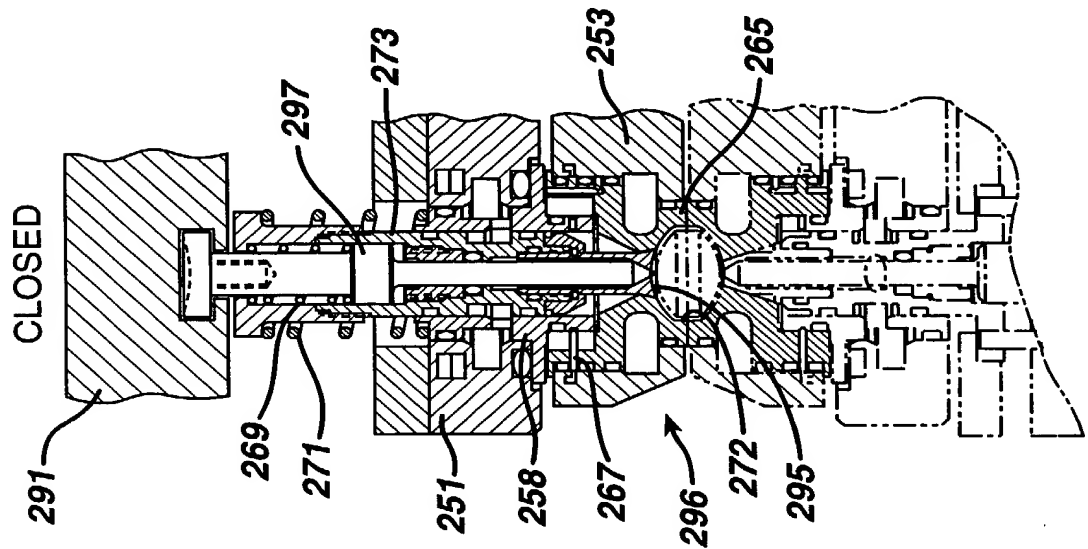
234

44↓   ↓44
45↓   ↓45

236

230

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 44

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
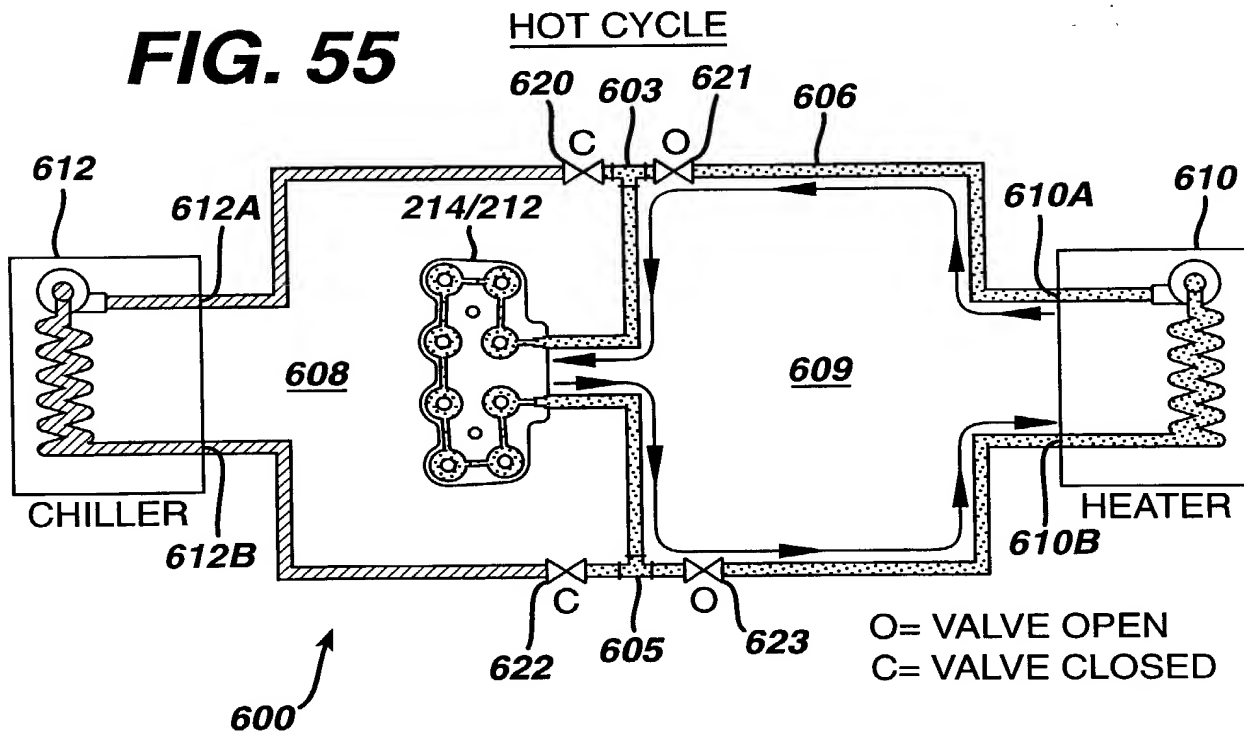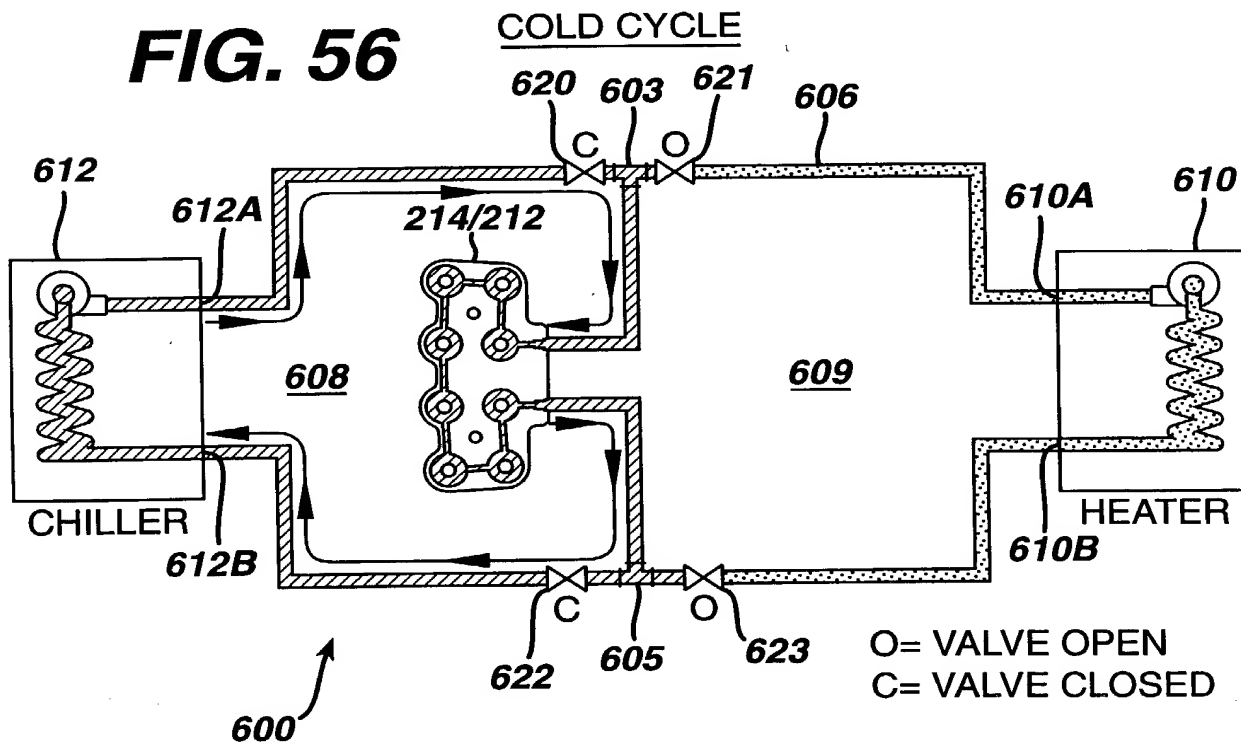DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 45

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
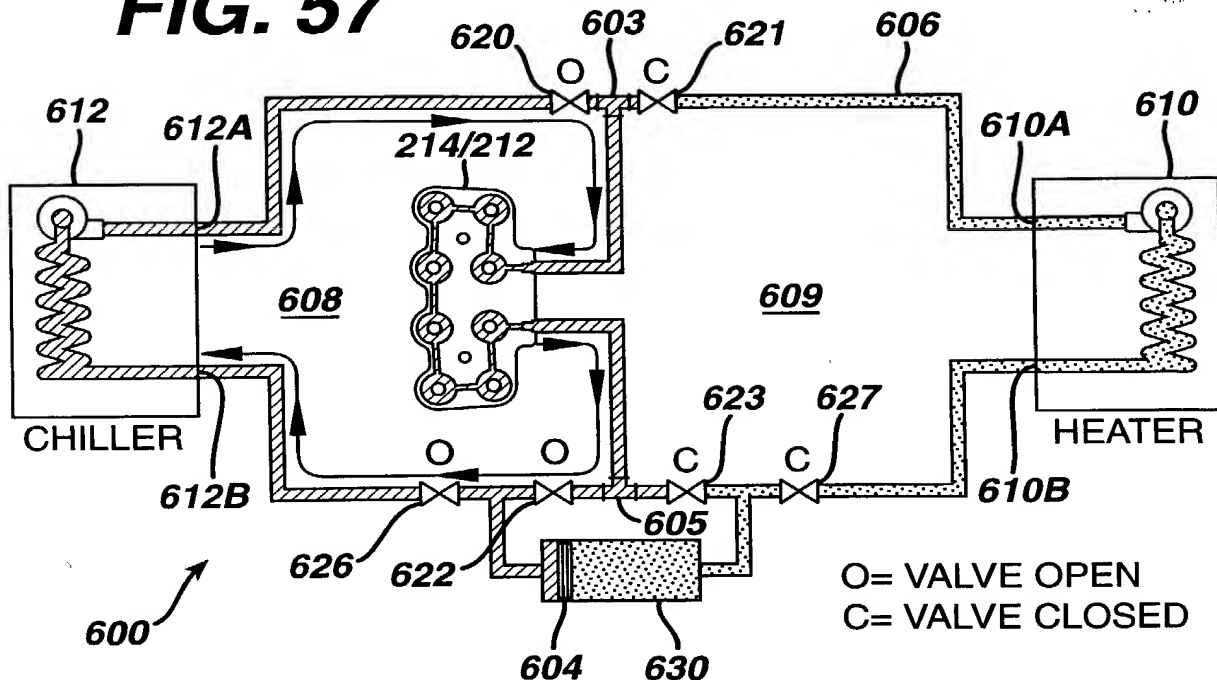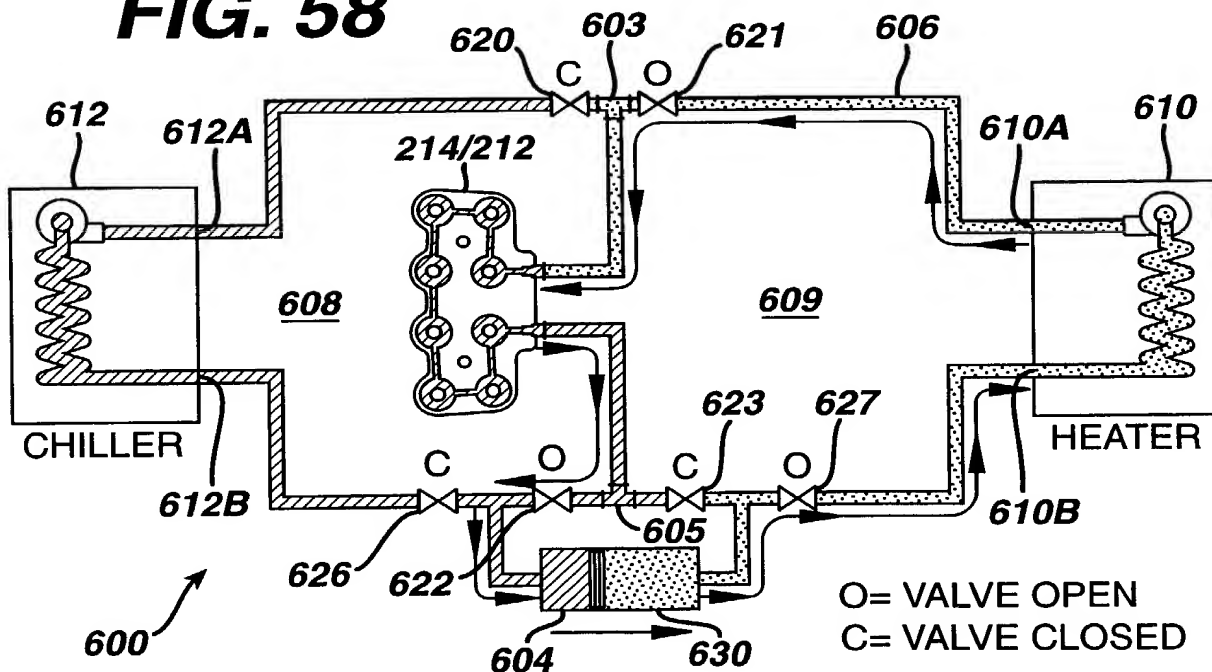
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FIG. 46

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
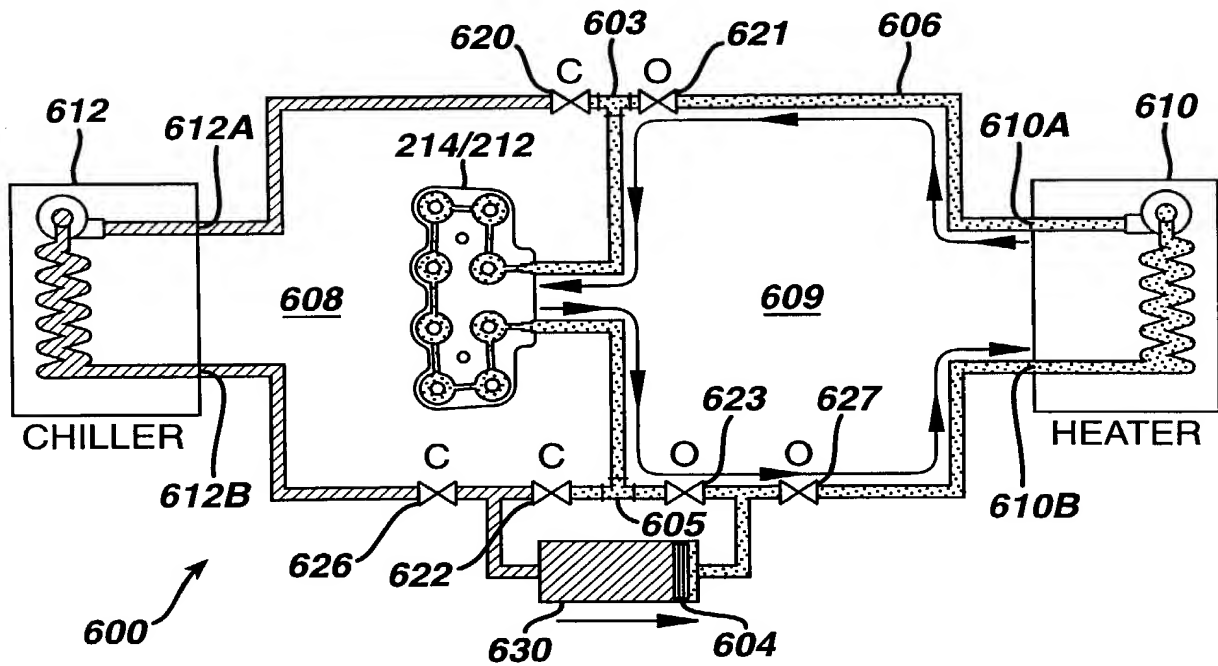DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 47

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
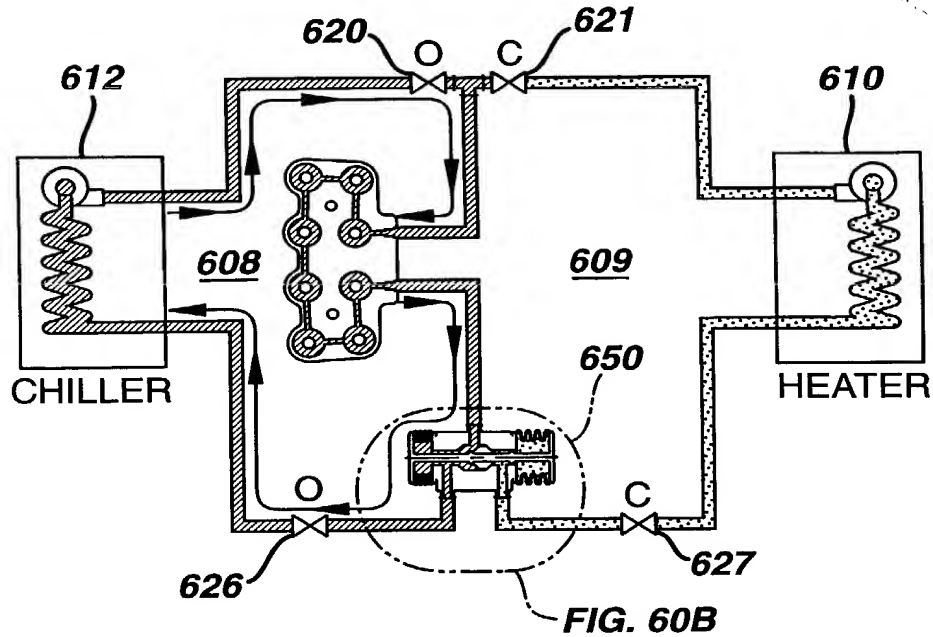
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FIG. 50

TRANSFER

FIG. 49

CLOSED

FIG. 48

INJECT

282B
286
284
256
234
230

290
280A
280
260
236
239
238
262
264
254
266
282

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
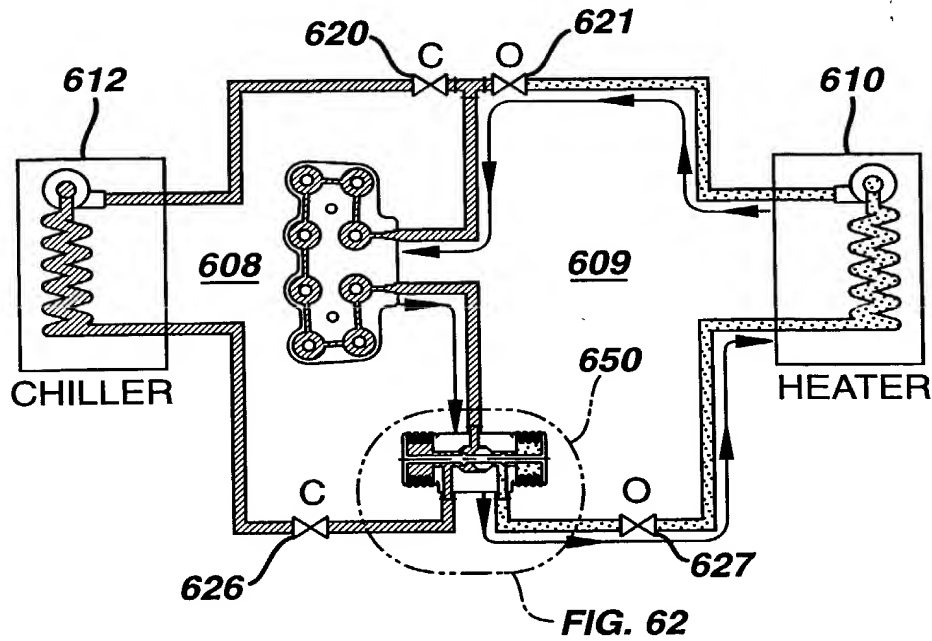ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 51

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
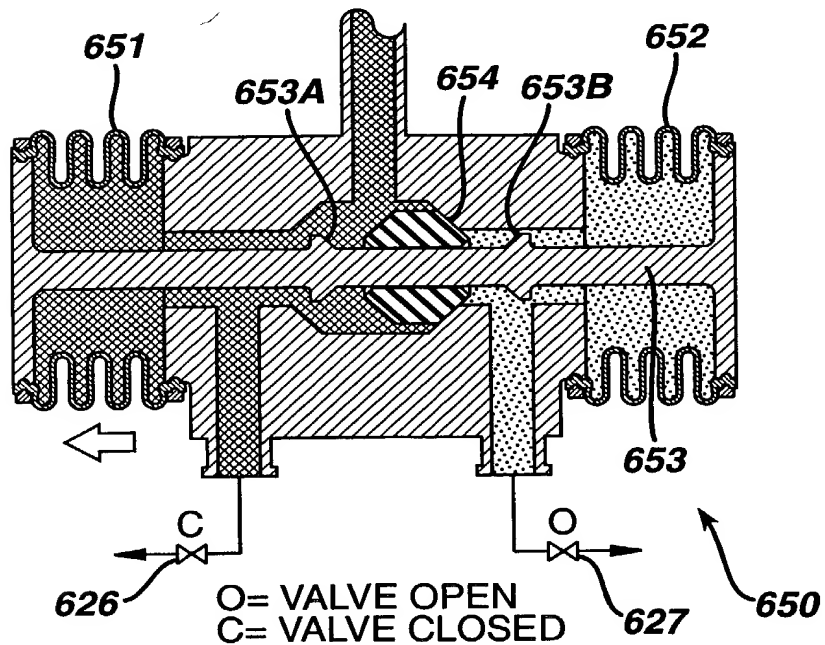DOCKET #: MCP-0242   CUST. #: 000027777

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*FIG. 54*

EJECT

291

251

296

FIG. 53

INJECT

297

291

251

265

FIG. 52

CLOSED

297

273

253

265

291

269

271

251

258

267

296

272

295

FIG. 55

HOT CYCLE

O= VALVE OPEN
C= VALVE CLOSED

FIG. 56

COLD CYCLE

O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 57

O= VALVE OPEN
C= VALVE CLOSED
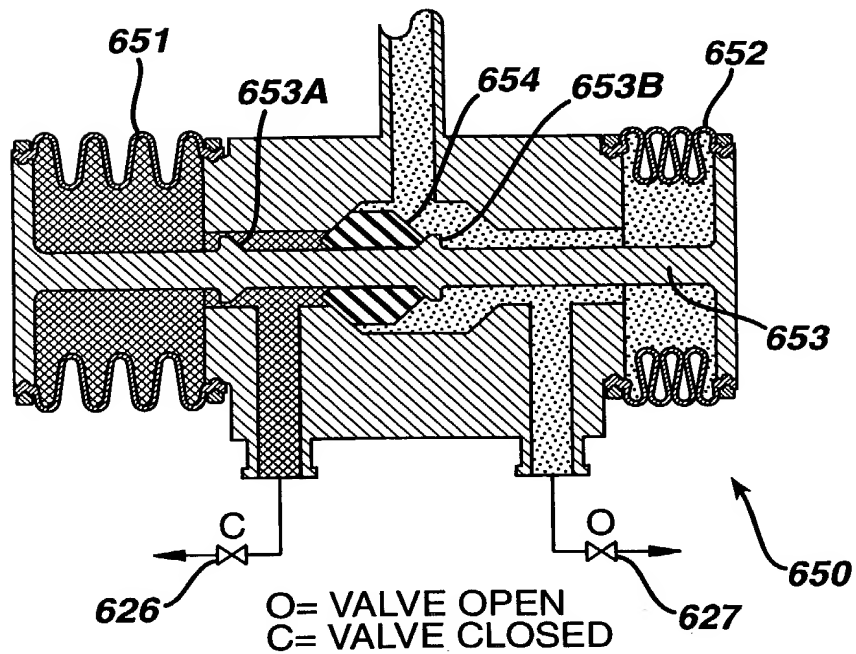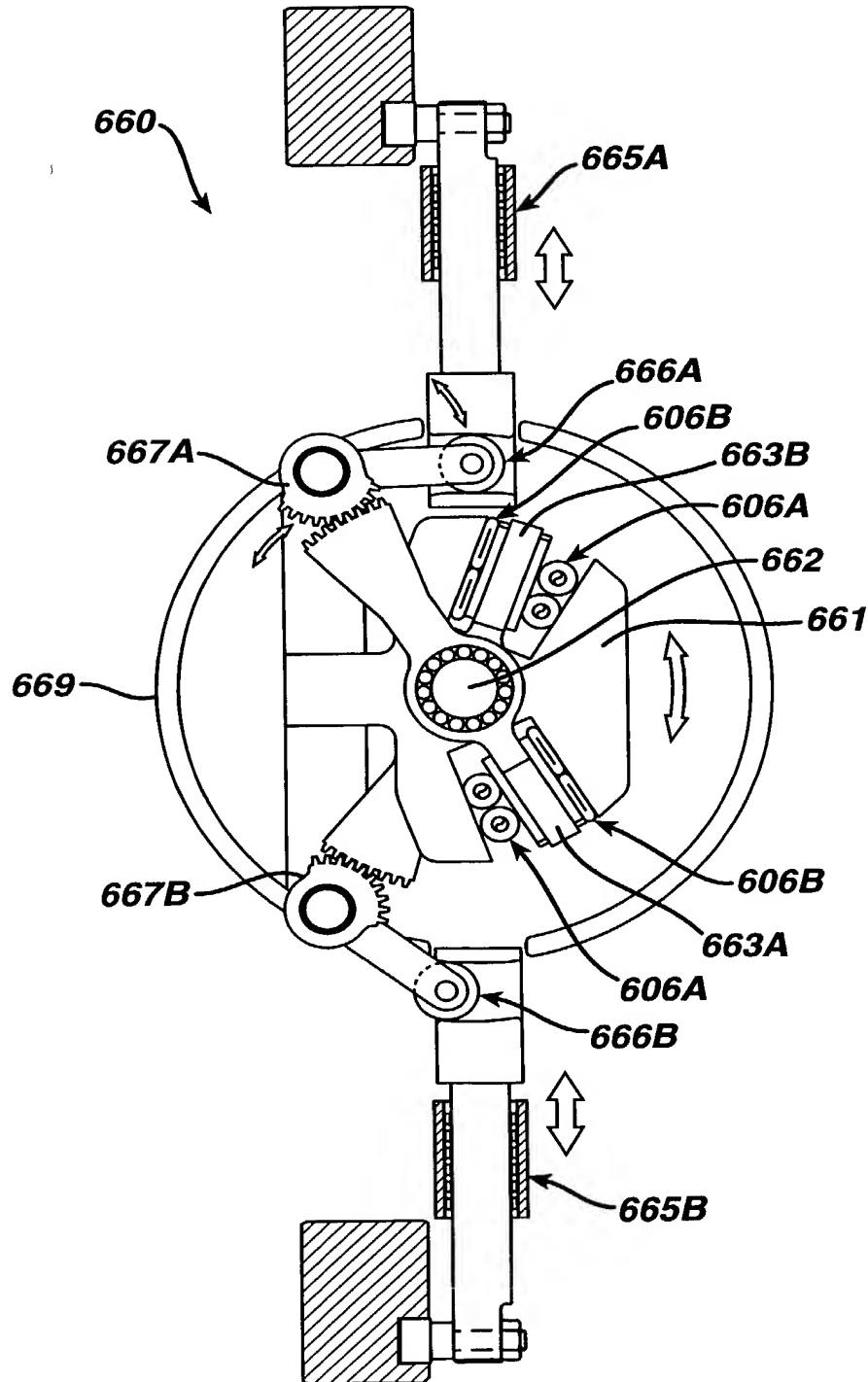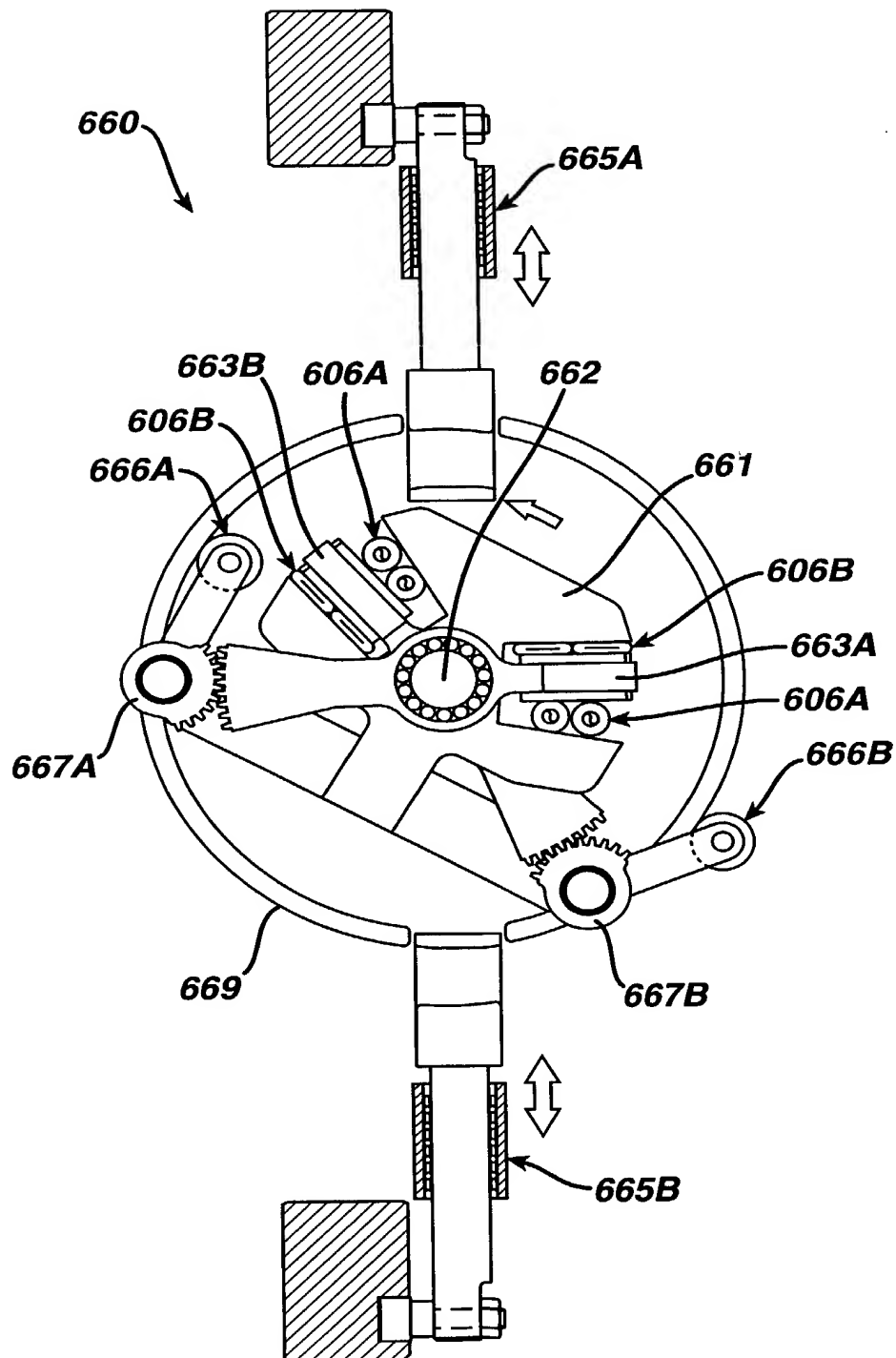
FIG. 58

O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
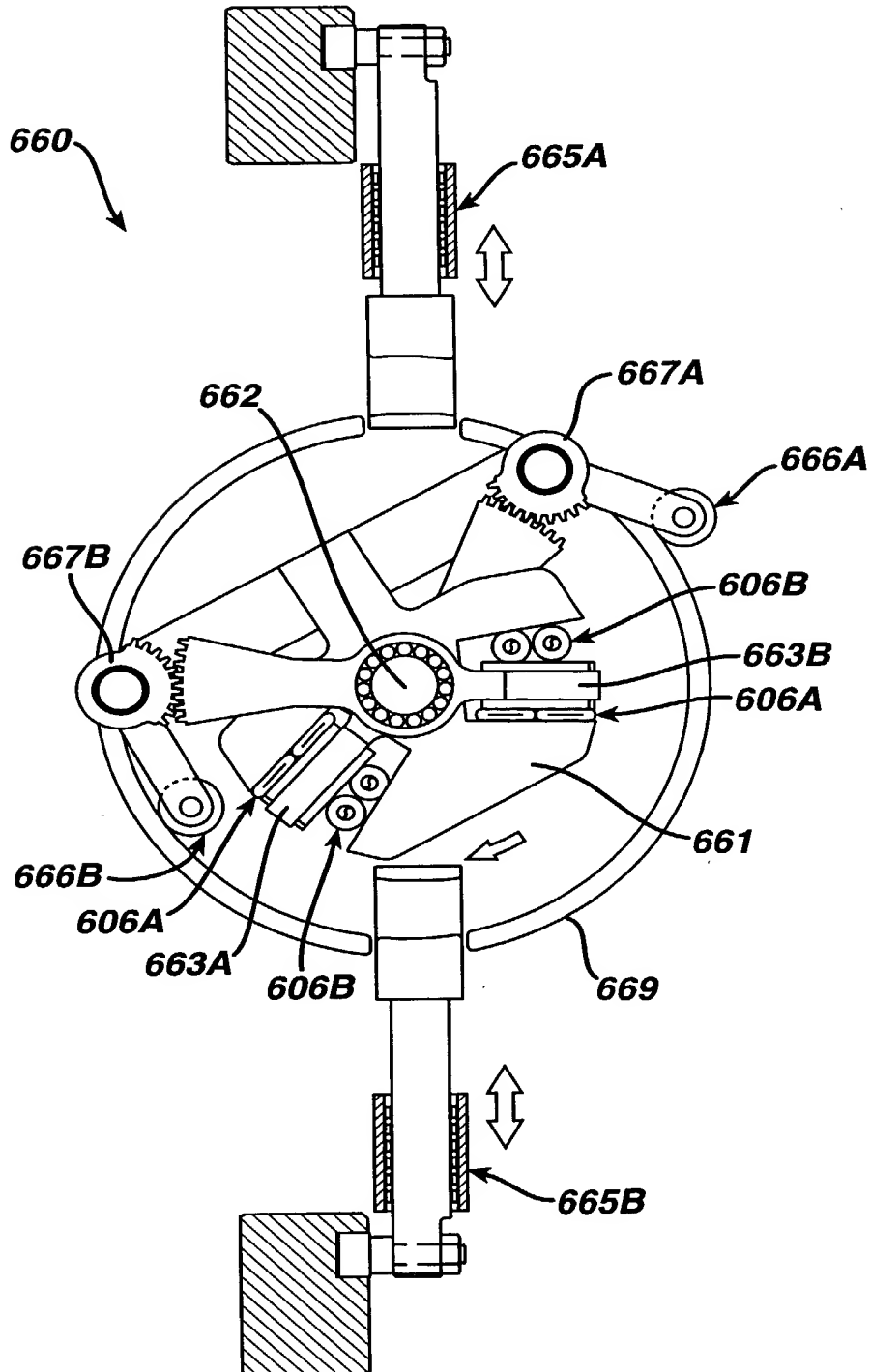DOCKET #: MCP-0242   CUST. #:   000027777
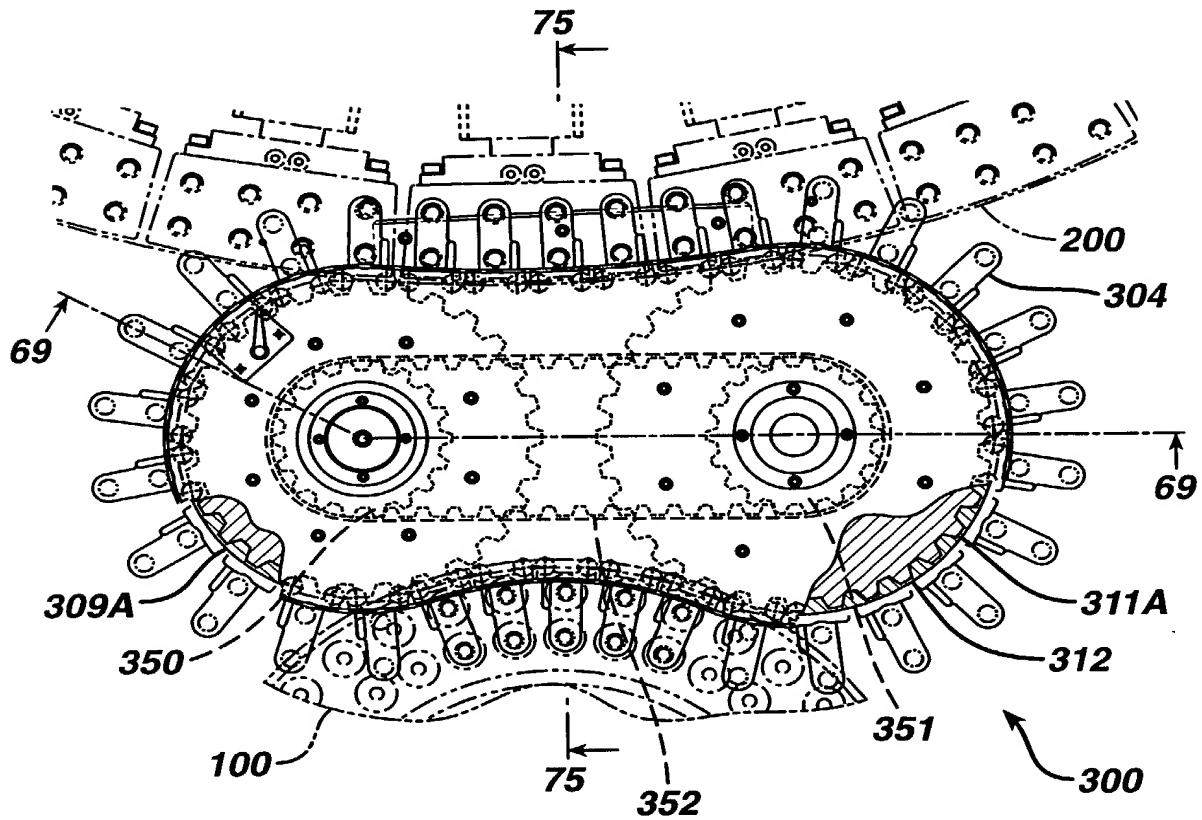
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FIG. 59

O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 60A

O= VALVE OPEN
C= VALVE CLOSED

FIG. 60B
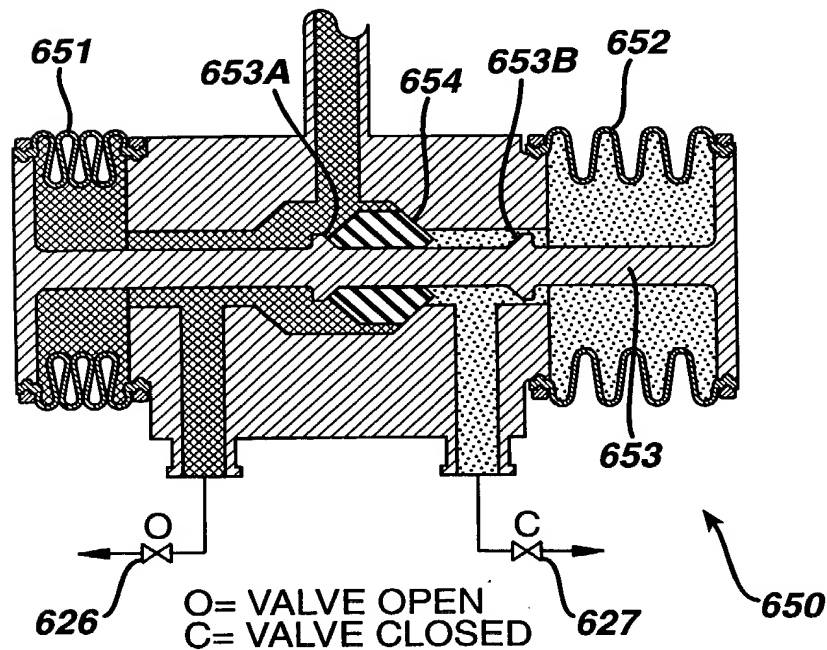
O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
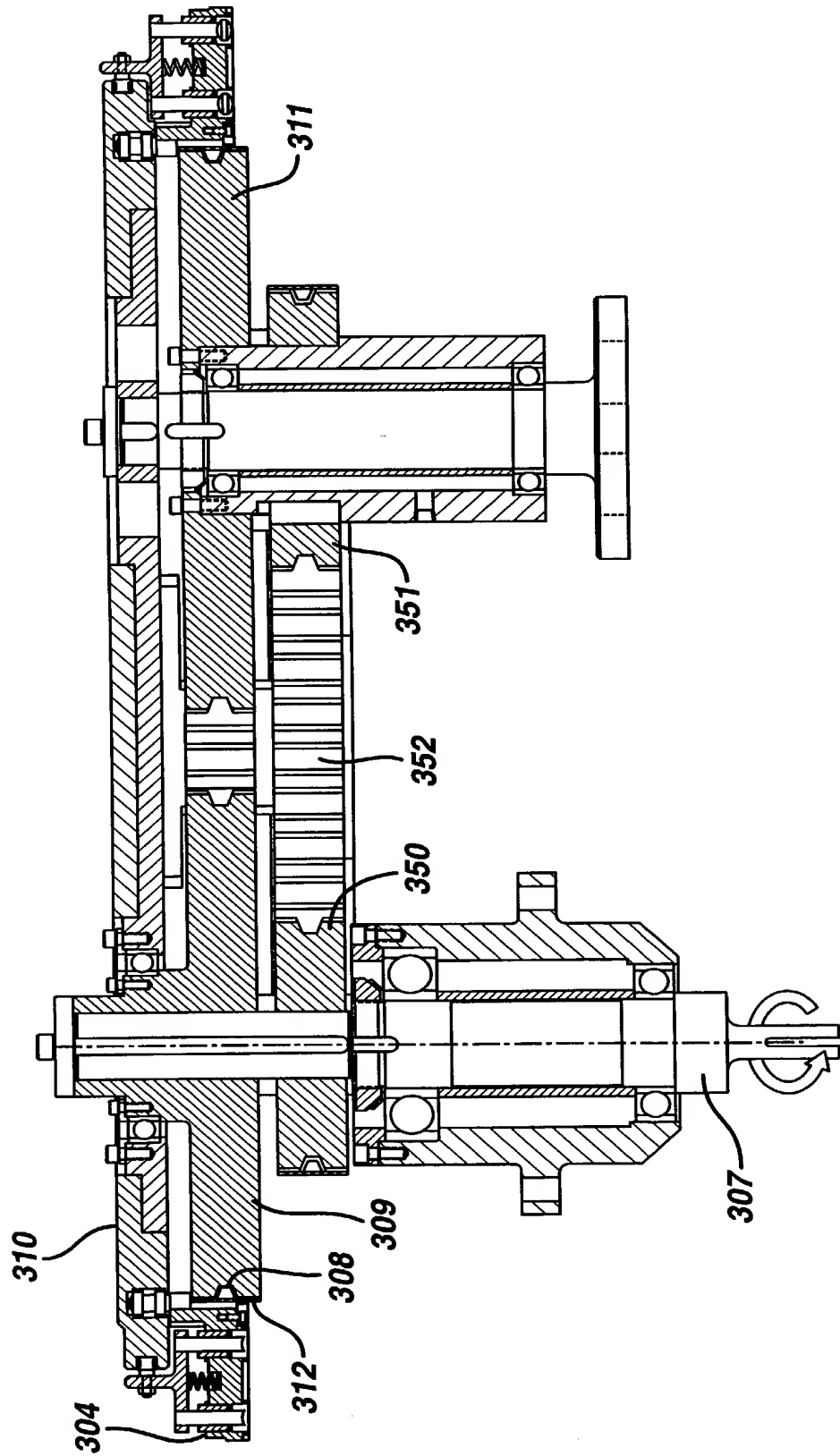DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 61

O= VALVE OPEN
C= VALVE CLOSED

FIG. 62

O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
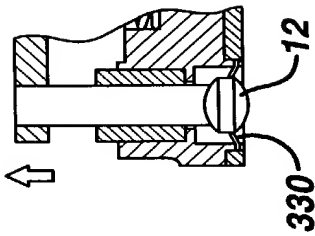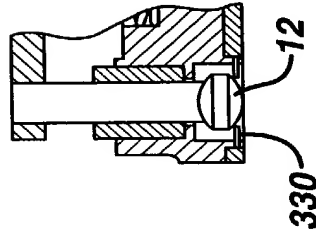DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 63
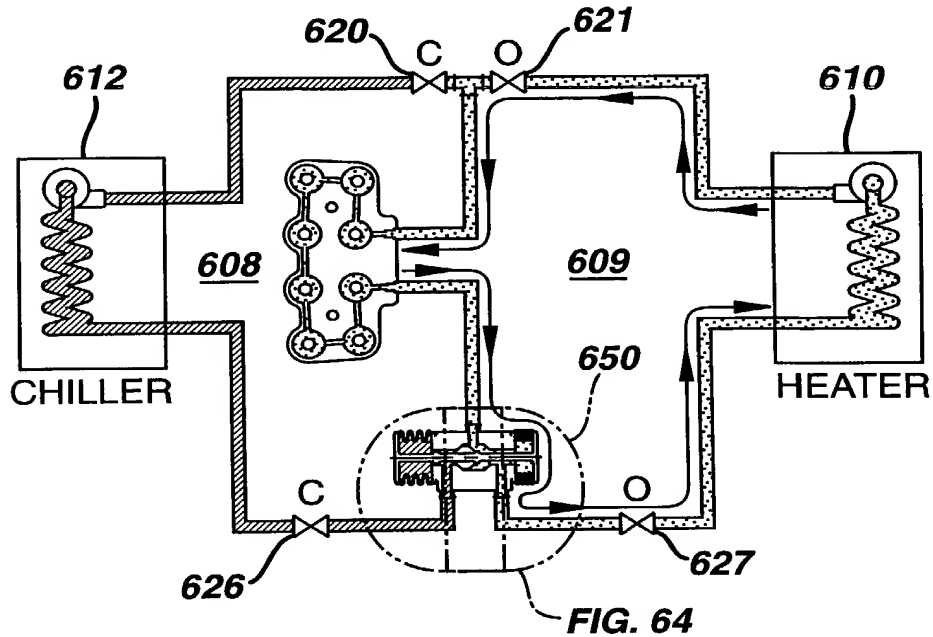
O= VALVE OPEN
C= VALVE CLOSED

FIG. 64

O= VALVE OPEN
C= VALVE CLOSED

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
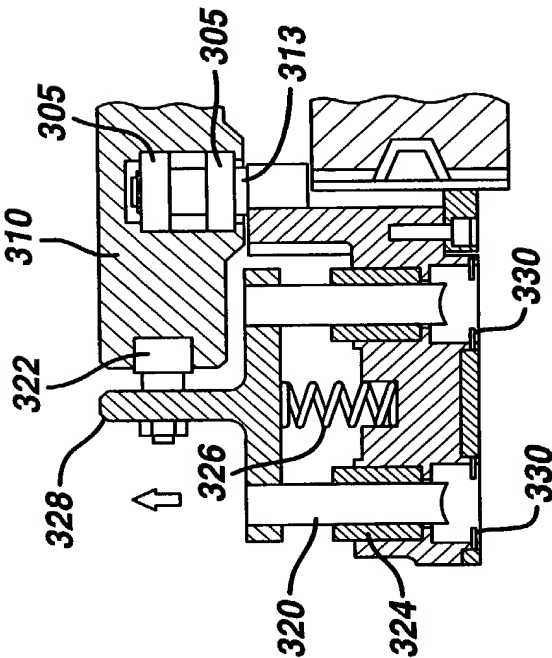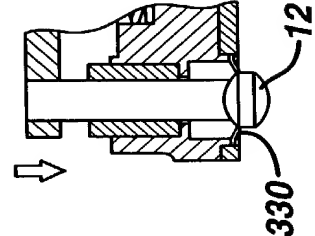DOCKET #: MCP-0242   CUST. #: 000027777
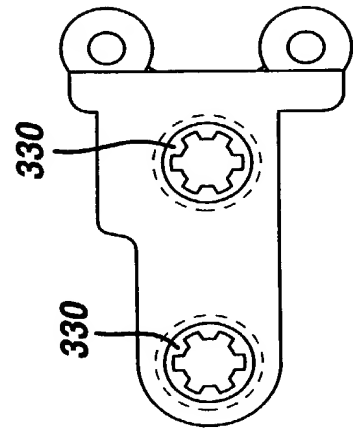
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FIG. 65

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 66

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
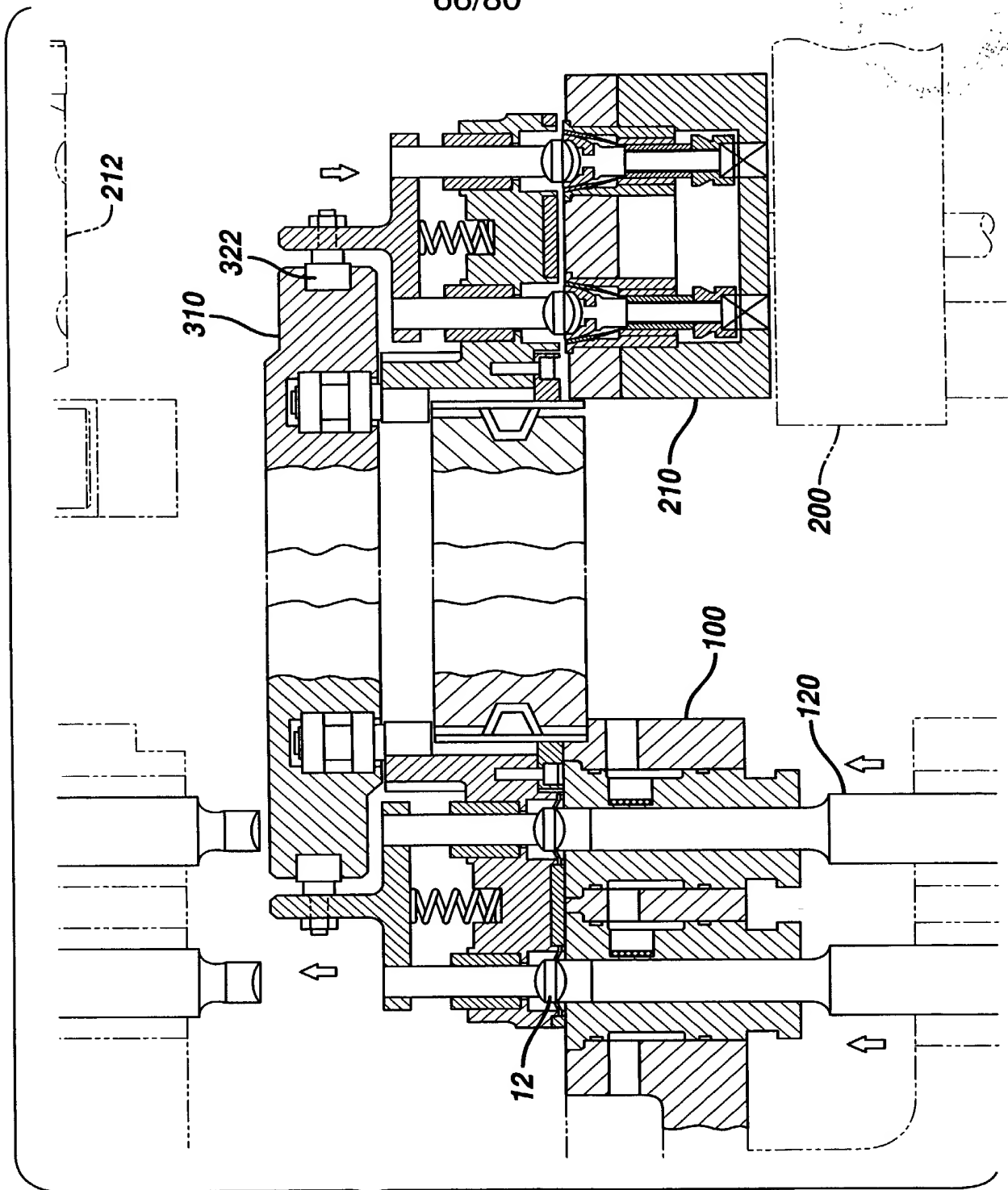DOCKET #: MCP-0242   CUST. #: 000027777
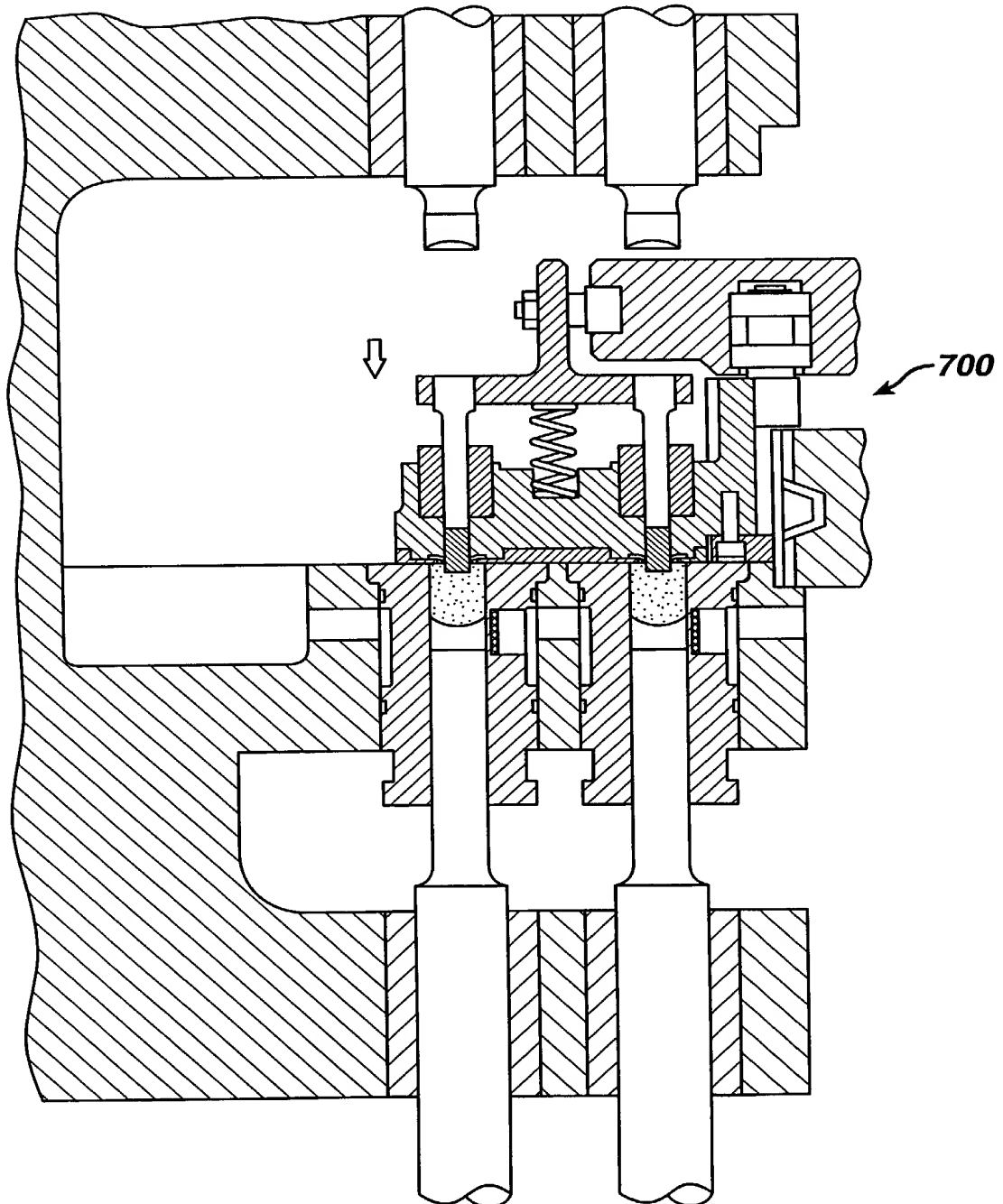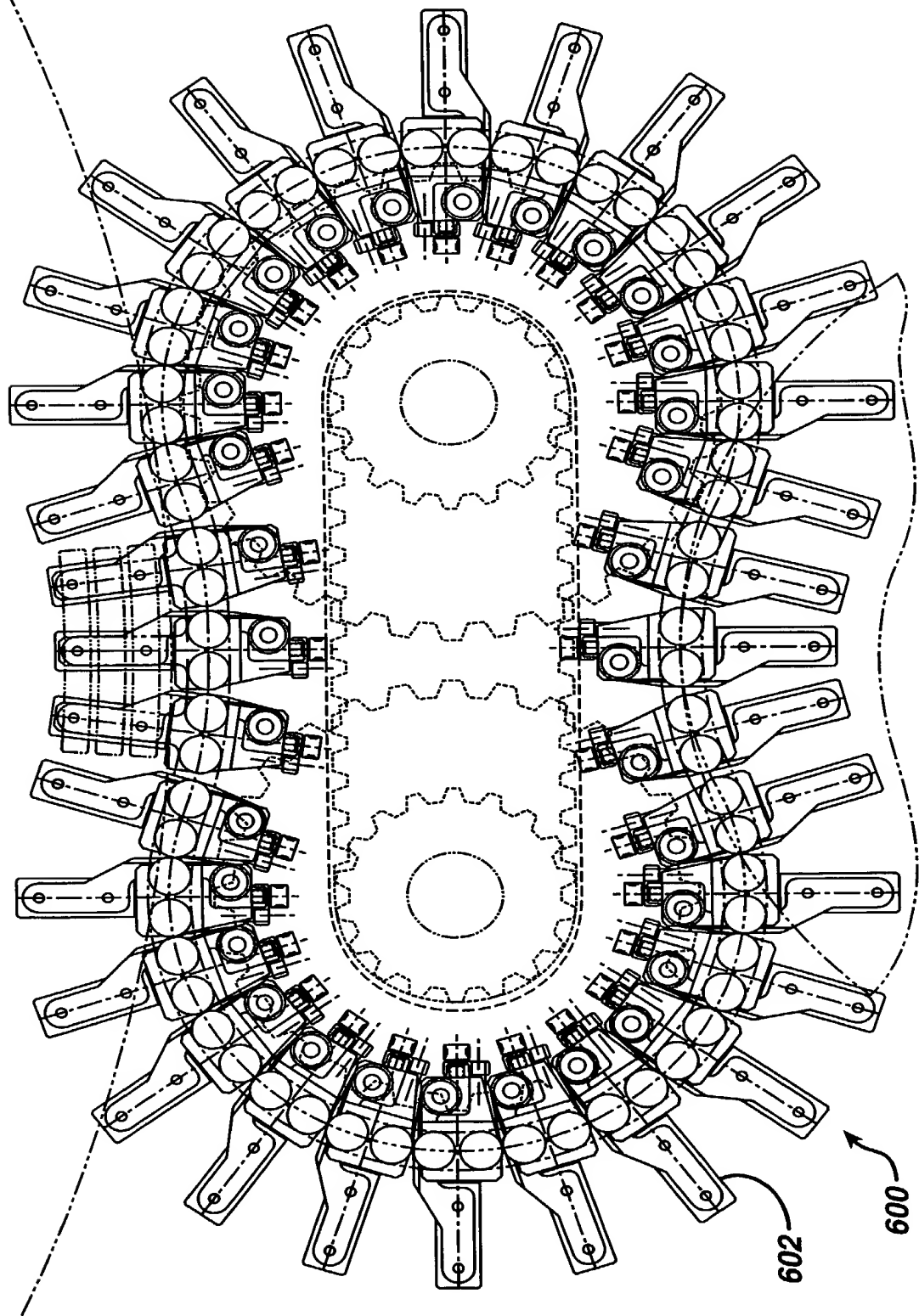
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FIG. 67

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 68

FIG. 69

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
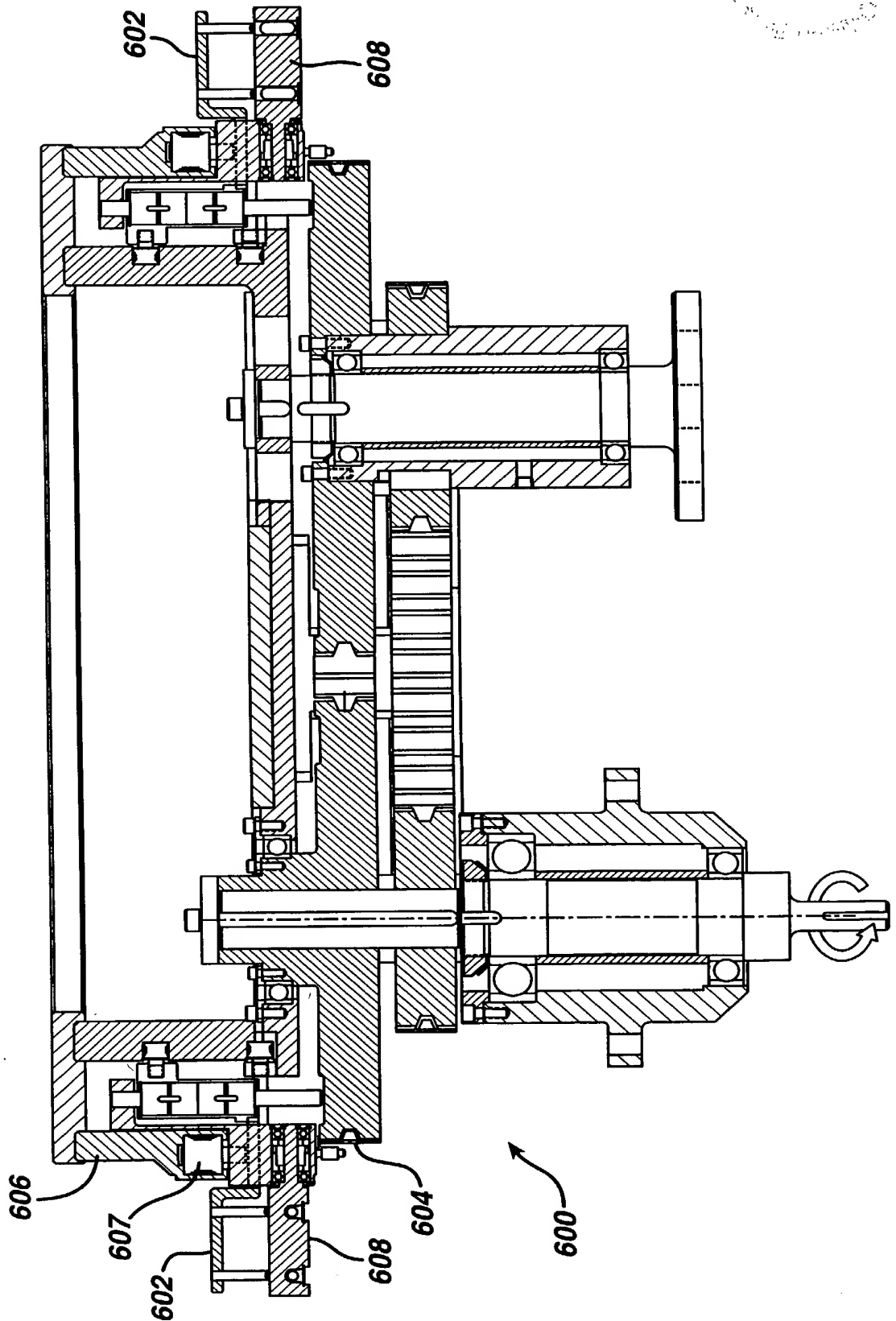DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 72

12

330

FIG. 73

12

330

FIG. 74

12

330

FIG. 70

305
305
313
310
330
322
330
328
326
320
324

FIG. 71

330

330

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
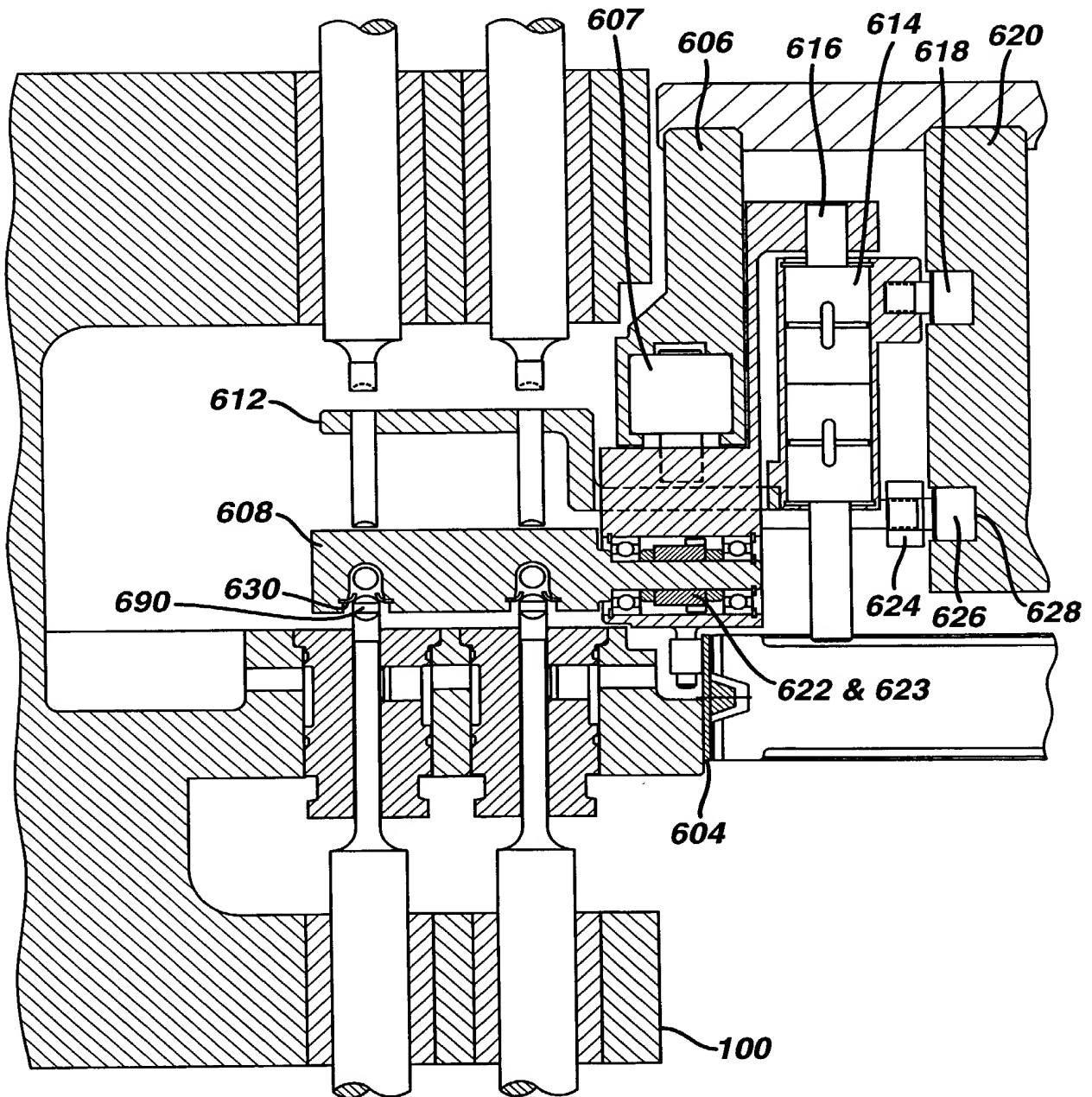DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 75

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777
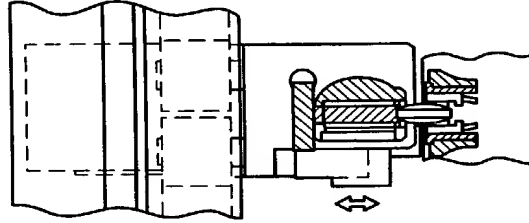
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FIG. 76

700

FIG. 77

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
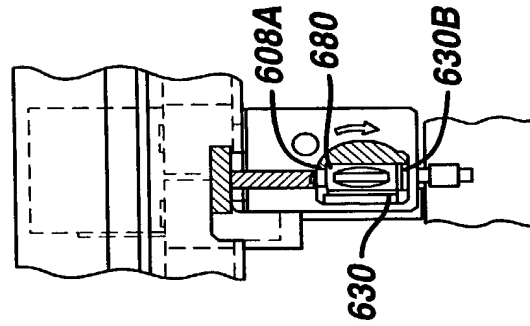DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 78

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
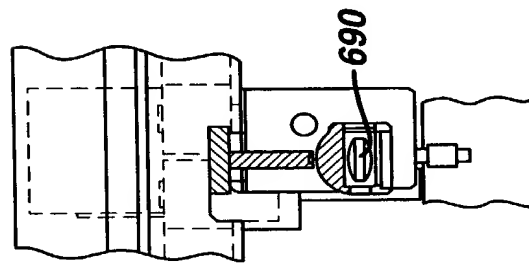DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 79

FLIP BACK ZONE

100

TRANSFER ZONE

600

FLIP 90° ZONE

200

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777
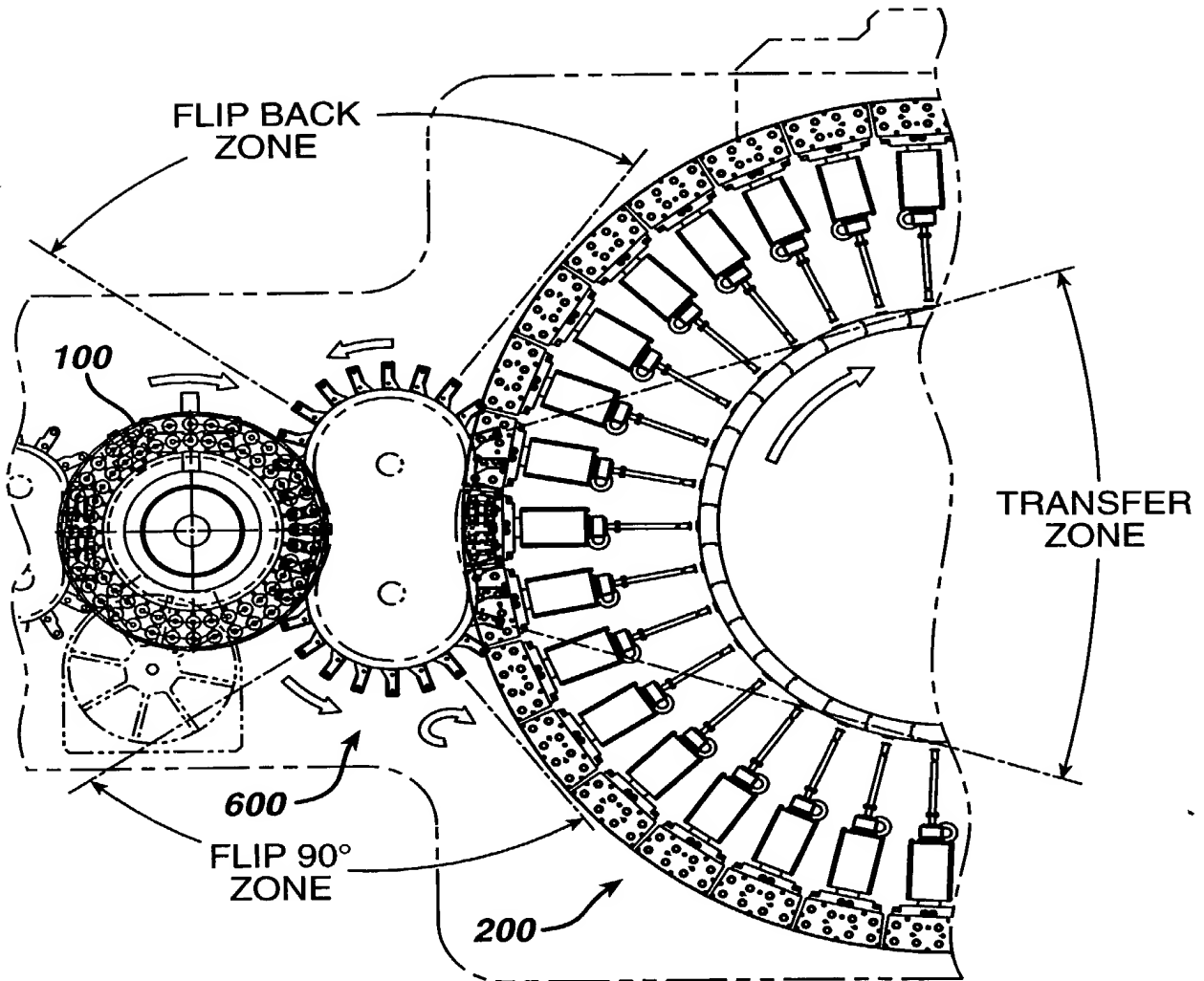
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FIG. 80

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
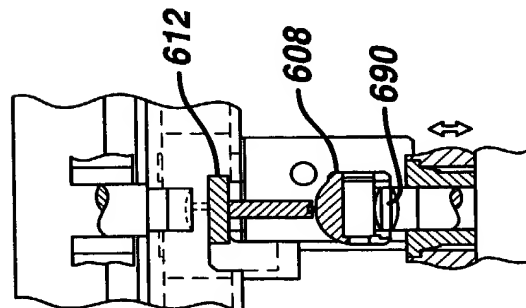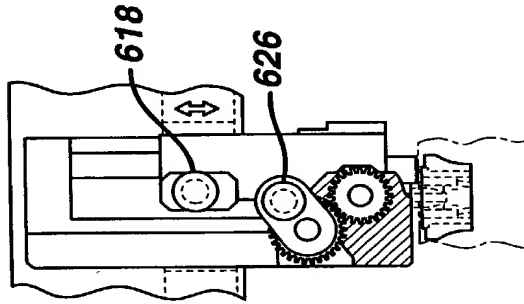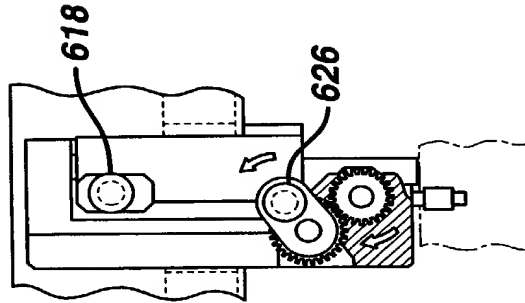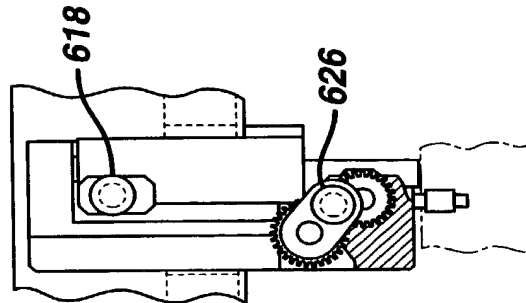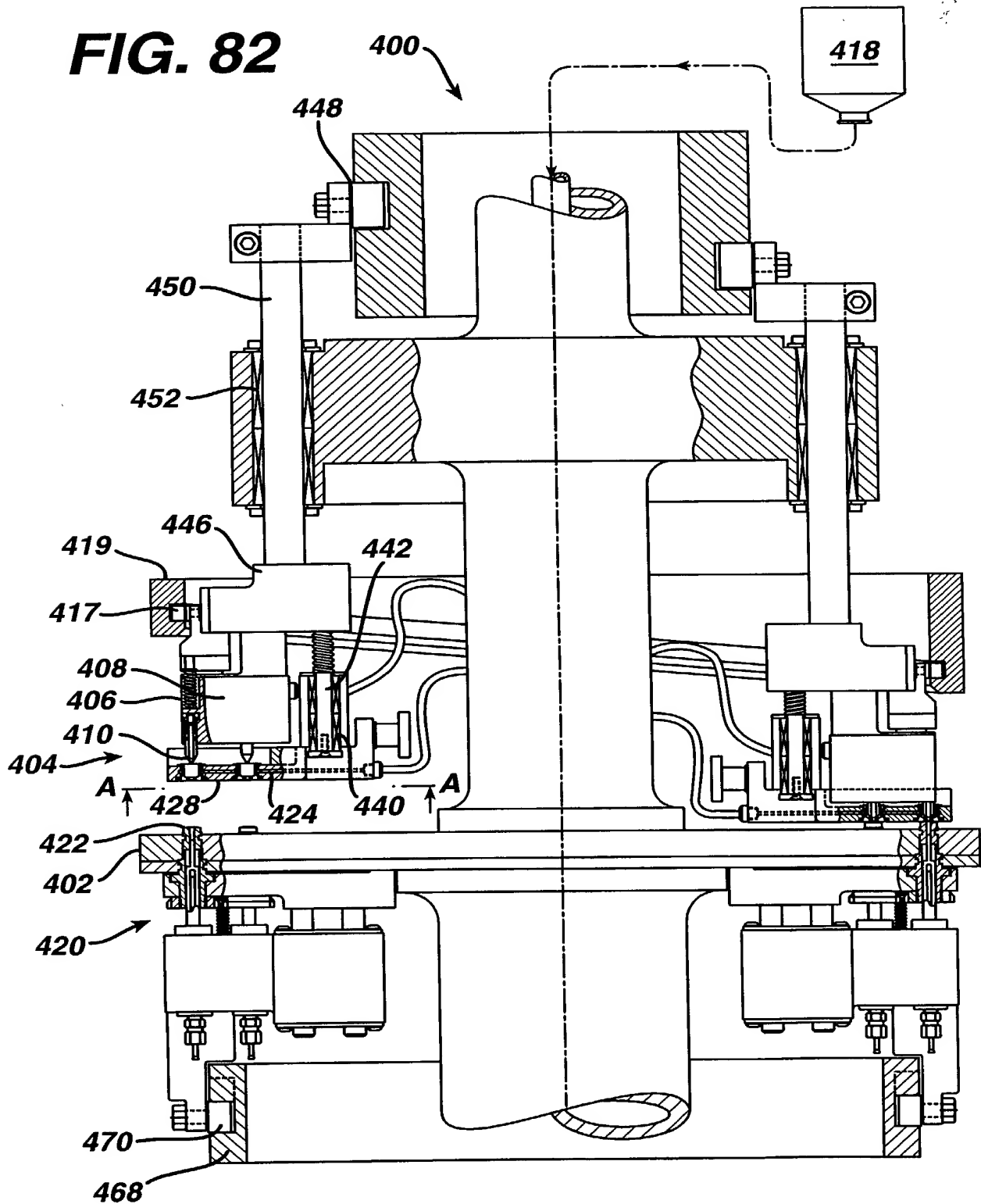DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 81D

FIG. 81C

608A
680
630B
630

FIG. 81B

690

FIG. 81A

612
608
690

FIG. 81G

618

626

FIG. 81F

618

626

FIG. 81E

618

626

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
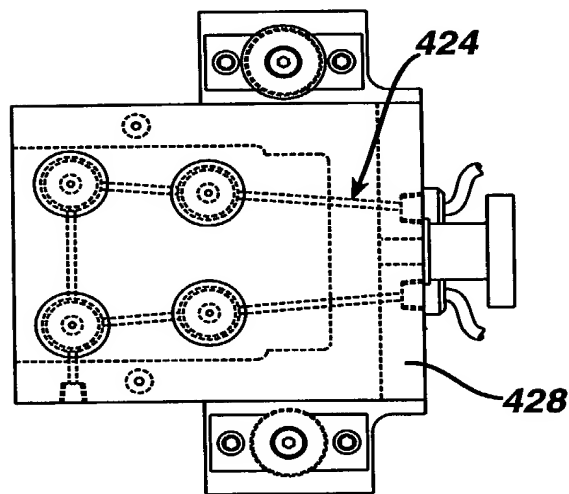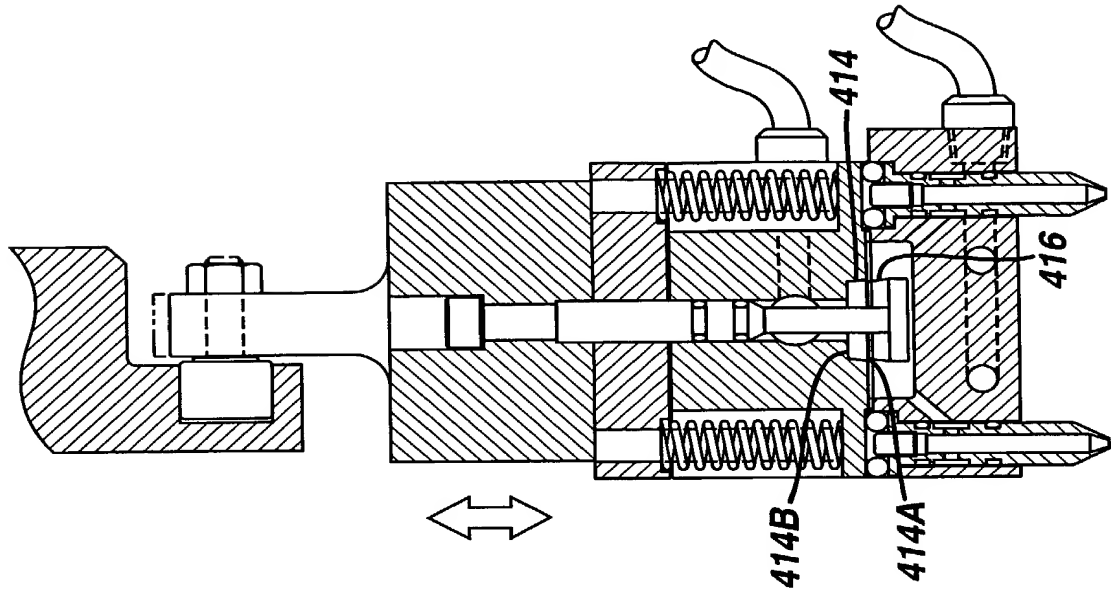ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 82
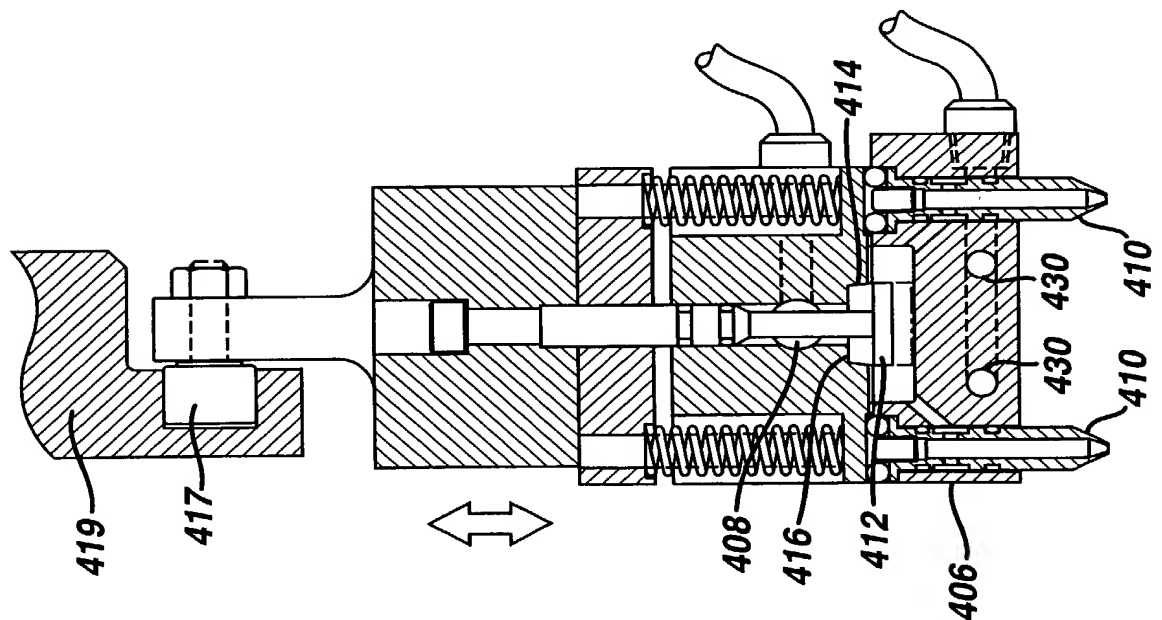
TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 82A

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
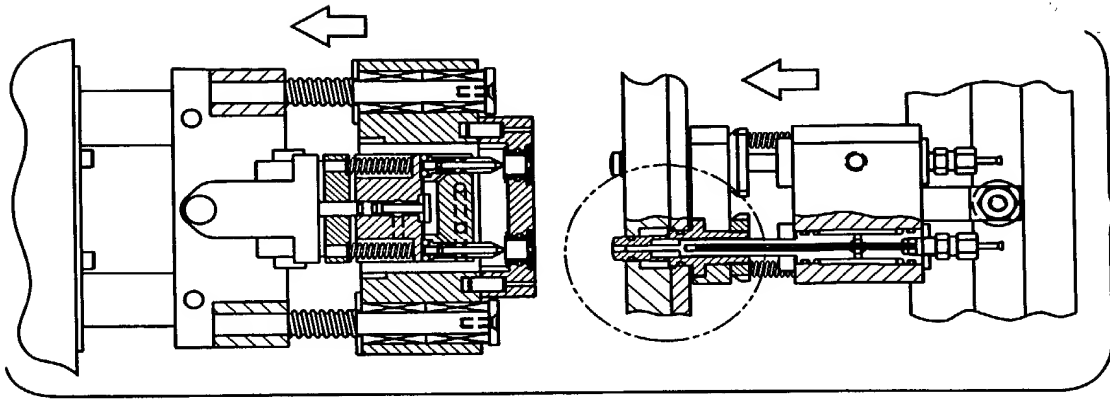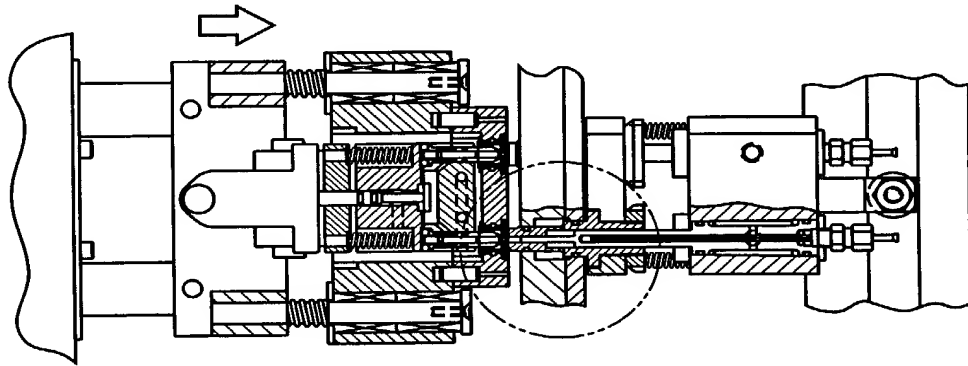DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 84

FIG. 83

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 85D

FIG. 85C

FIG. 85B

FIG. 85A

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
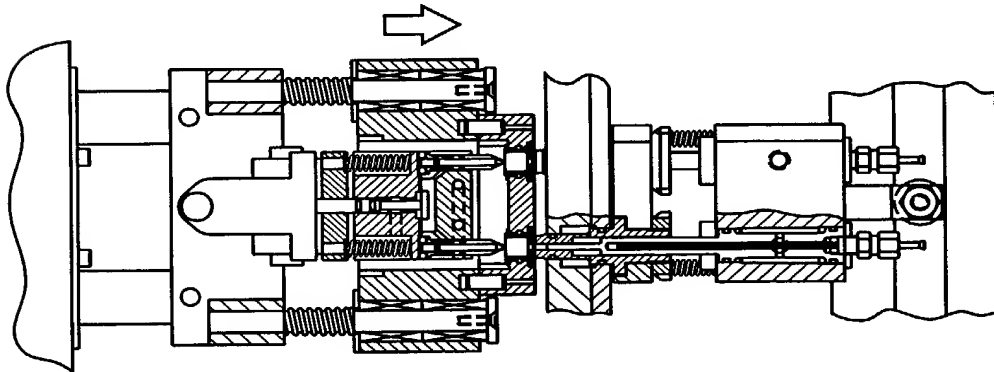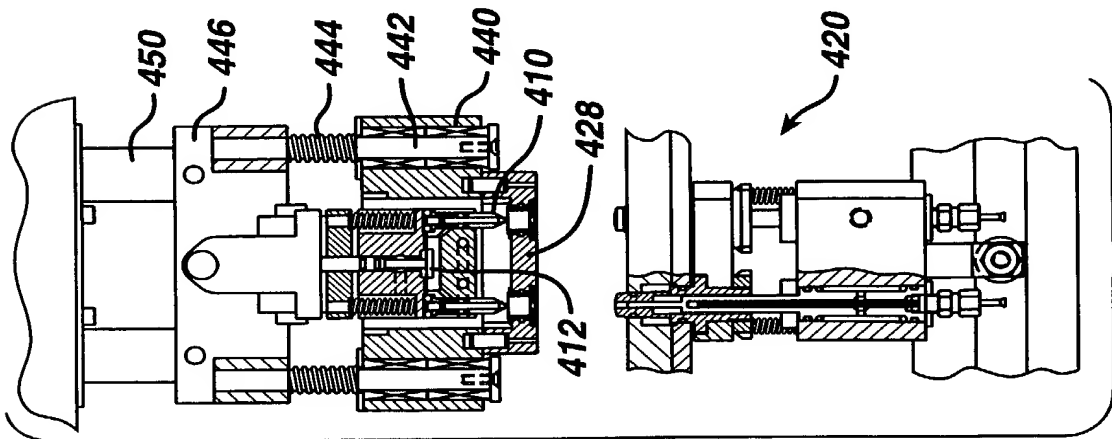DOCKET #: MCP-0242   CUST. #:   000027777

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FIG. 86

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
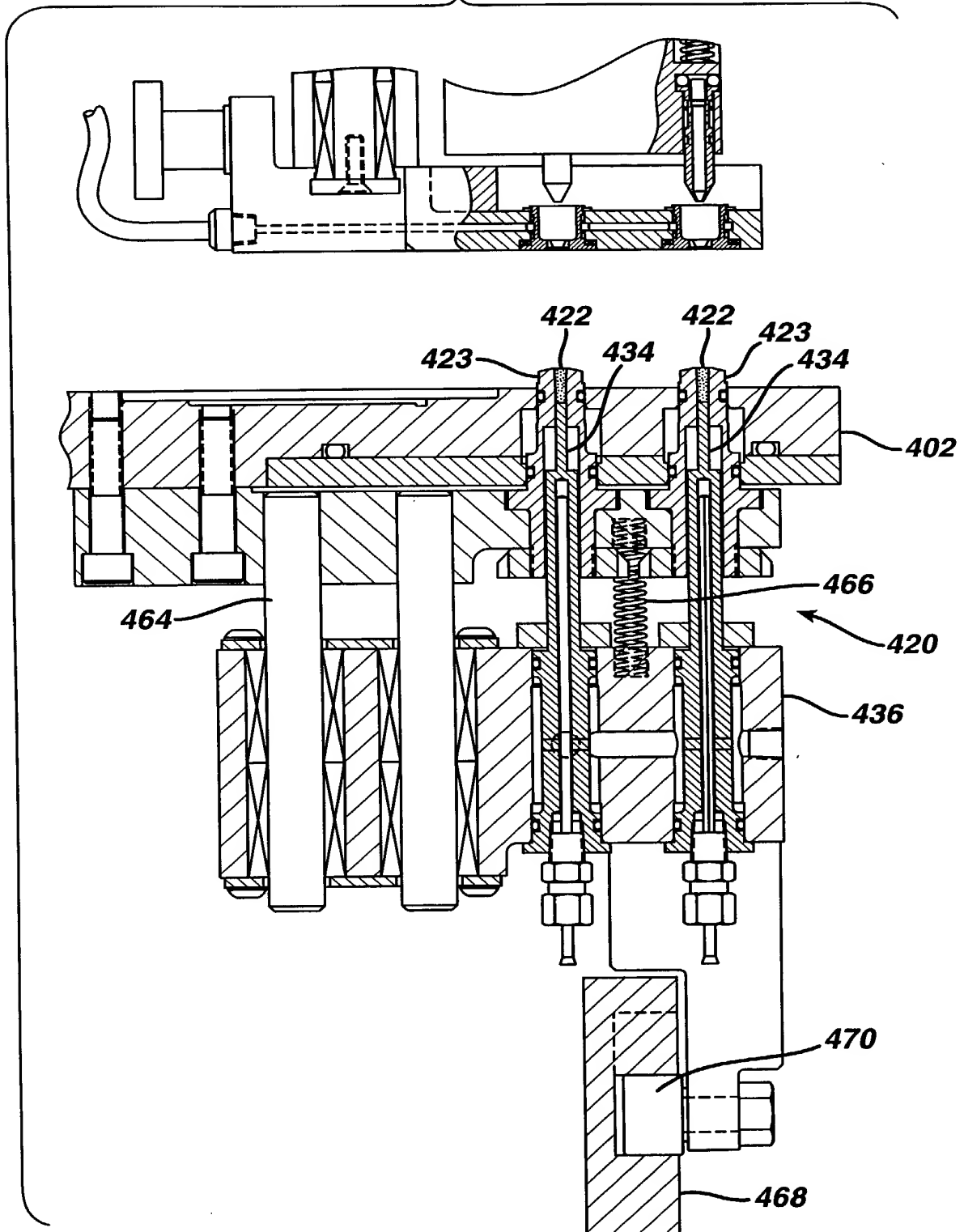DOCKET #: MCP-0242   CUST. #: 000027777
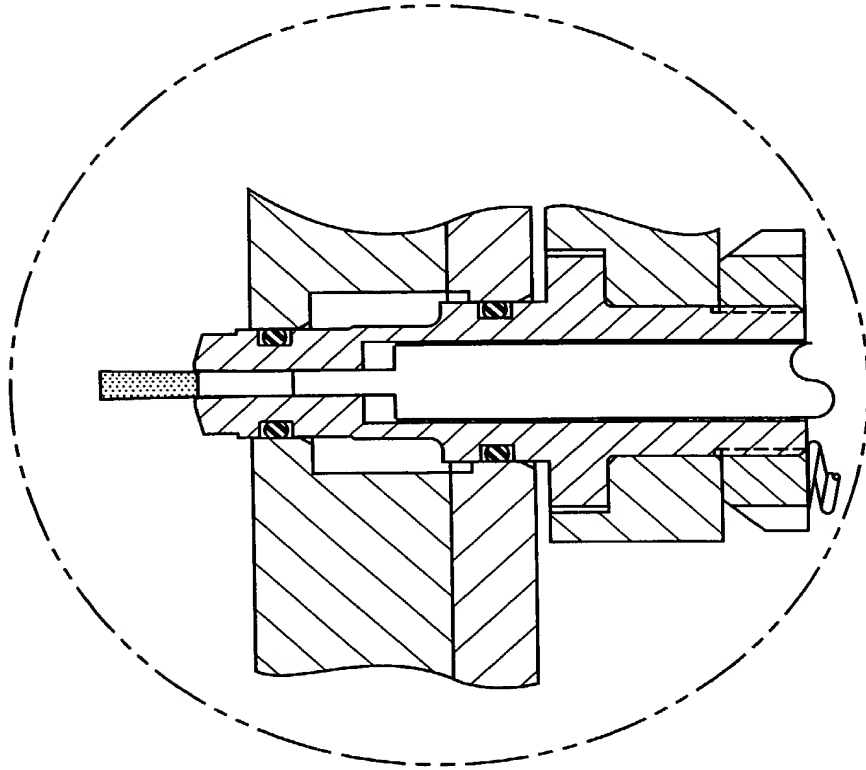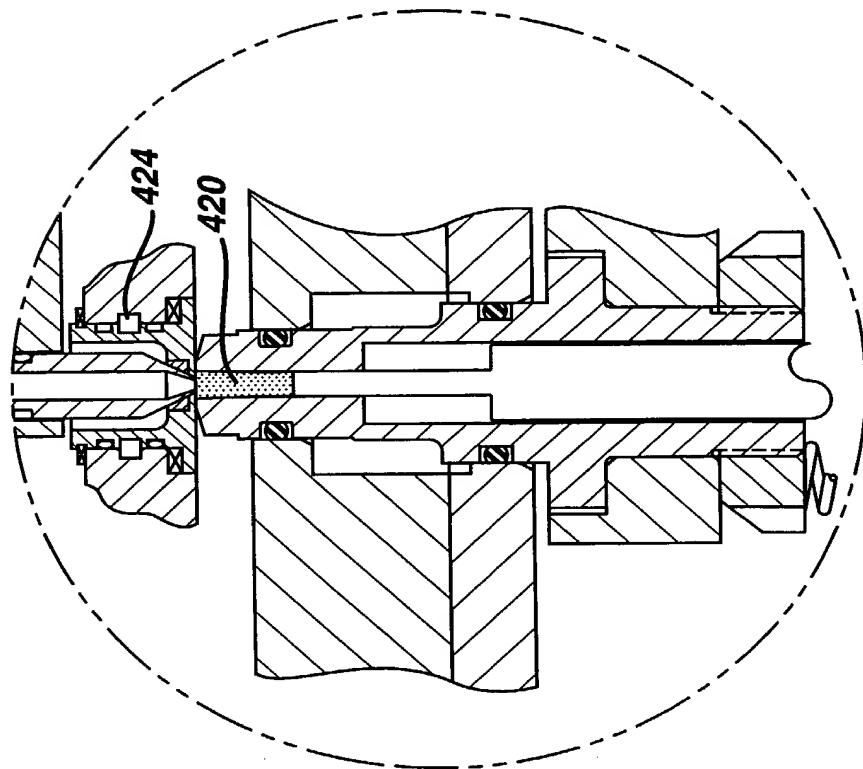
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FIG. 88

FIG. 87

TITLE: Systems, Methods and Apparatuses for...
INVENTOR(S): Sowden, et al.
APP#: 09/966939
ATTY: S. E. Hayner   TEL. #: 732-524-2242
DOCKET #: MCP-0242   CUST. #: 000027777

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FIG. 89